

IMPORTANT BIRD AND BIODIVERSITY AREAS IN INDIA

Priority sites for Conservation

Revised and updated 2nd Edition Vol. I



IMPORTANT BIRD AND BIODIVERSITY AREAS IN INDIA

Priority sites for conservation

**Second Edition: Revised and Updated
Volume I**

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BIHAR

IN-BR



ASAD RAHMANI

Thanks to the environmental education programme of Mandar Nature Club, Bhagalpur, and support of villagers, the population of Greater Adjutant *Leptoptilos dubius* has increased to more than 300 birds

Bihar (22° 00' - 27° 45' North and 83° 15' - 88° 30' East) has a geographical area of 94,163 sq. km which constitutes 2.9% of the land area of the country. Bihar has two distinct physiographic regions, namely the Gangetic Plain and the Southern Plateau. The State is watered by four major rivers, the Ganga, the Sone, the Gandak and the Damodar. It was left with the agriculturally rich alluvial Gangetic area when the forest and mineral rich region of Jharkhand in the south became a separate state in 2000. Bihar has a long and impressive history of culture and education.

The annual rainfall in the State varies from 1,000 mm to 2,000 mm. The temperature ranges from 4°C to 45°C.

Bihar is the second most populous state of the country. The population increased exponentially from 82.88 million to 104.10 million (8.5% of India's population), 88.71% of which is rural (2011 census). The population density is 1,106 persons per sq. km.

Vegetation

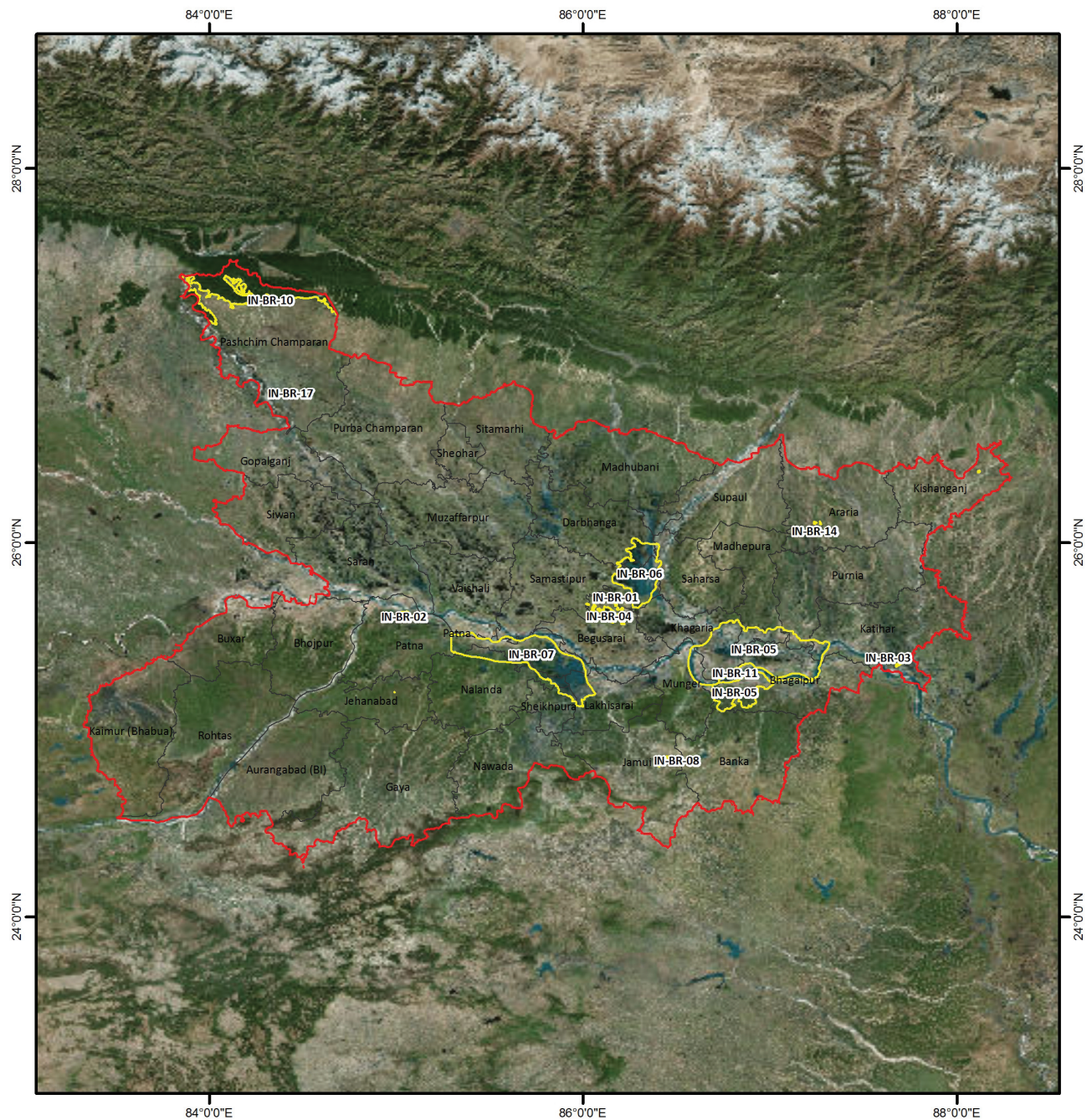
There were three major forest types in undivided Bihar: Tropical Moist Deciduous, Tropical Dry Deciduous, and Subtropical Broadleaf Hill Forests. Sal *Shorea robusta* is the

major forest species, which covers about 55% of the forest area (Ministry of Environment and Forests 1999).

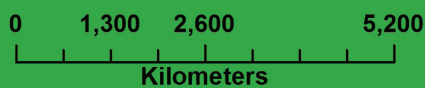
The Forest Survey of India report of 2001 reports that the recorded forest area is 2.92 million ha which constitutes 16.81% of the geographical area of the State. The Chotanagpur Plateau and the south Bihar Plains covering the southern half of the State are rich in forest resources whereas the Gangetic Plains, which are thickly populated and intensively cultivated, have meagre forest resources. The reserved forest constitutes 10.7%, and the protected forest 89.27% of the recorded forest area. The Forest Survey of India report of 2001 has recorded dense forest in northwest, southwest and southern Bihar.

Bihar is basically an agricultural state where nearly 80% of people depend on farming or related activities. Thanks to the rich alluvial soil, good rainfall and annual flooding of rivers, most of the forest cover has gone under the plough. As human population density is high, most land holdings are small and intensively used. Bihar used to have, and still has in many areas, a large number of wetlands that are extremely important for waterfowl. The finest example is the Kabar Taal. Most of the smaller wetlands have been drained, encroached upon and/or are under intense human

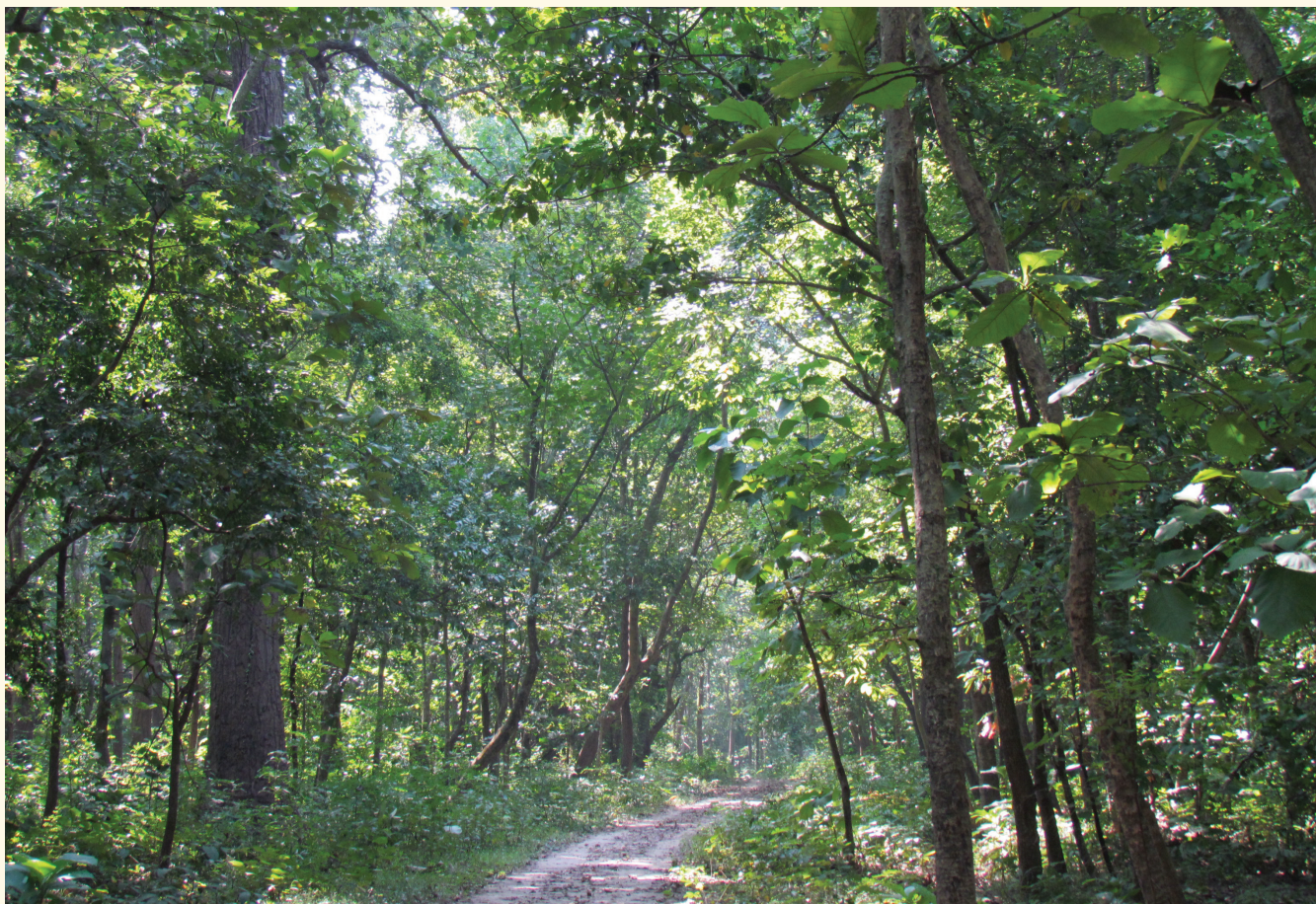
Important Bird Areas in Bihar



IN-BR



SAMIR KR SINHA



Thick forest and wet terai grasslands are present in Valmiki Tiger Reserve. There are chances of occurrence of Bengal Florican *Houbaropsis bengalensis* as it is found in Chitwan National Park across the border. Repeat surveys are required

SAMIR KR SINHA



IBAs of Bihar		
IBA site codes	IBA site names	IBA criteria
IN-BR-01	Chaur of North Bihar	A4iii
IN-BR-02	Danapur Cantonment Area	A1, A4i
IN-BR-03	Gogabil Pakshi Vihar, Baghar Beel and Baldia Chaur	A1, A4iii
IN-BR-04	Kanwar or Kabar Lake Bird Sanctuary	A1, A4iii
IN-BR-05	Kadwa-Khairpur Diyara and Kosi Floodplains	A4iii
IN-BR-06	Kusheshwarsthan Bird Sanctuary	A1
IN-BR-07	Mokama Taal (Barah) Wetlands and Fatuah Taal	A1, A4i, A4iii
IN-BR-08	Nagi Dam and Nakti Dam Bird Sanctuary	A4i, A4iii
IN-BR-09	Reservoirs of Chotanagpur Plateau (not included)	A4i, A4iii
IN-BR-10	Valmiki Tiger Reserve and Saraiyaman Lake	A1, A3
IN-BR-11	Vikramshila Gangetic Dolphin Sanctuary	A1
IIB-BR-12	Jehanabad Administrative Area	A1, A4i, A4iii
IB-BR-13	Kachudah Lake and Mahananda River Course	A1, A3
IB-BR-14	Kajra Dhar and Raniganj Protected Forest	A1

LIST OF THREATENED BIRDS WITH IBA SITE CODES

CRITICALLY ENDANGERED

White-rumped Vulture	<i>Gyps bengalensis</i>	IN-BR-01, 04, 07, 10, 11
Long-billed Vulture	<i>Gyps indicus</i>	IN-BR-04, 07, 10
Red-headed Vulture	<i>Sarcogyps calvus</i>	IN-BR-10

ENDANGERED

Egyptian Vulture	<i>Neophron percnopterus</i>	IN-BR-13
Greater Adjutant	<i>Leptoptilos dubius</i>	IN-BR-05, 07, 11
Black-bellied Tern	<i>Sterna acuticauda</i>	IN-BR-04, 05, 08, 11, 13

VULNERABLE

Asian Woollyneck	<i>Ciconia episcopus</i>	IN-BR-03, 04, 05, 06, 07, 08, 11
Lesser Adjutant	<i>Leptoptilos javanicus</i>	IN-BR-01, 03, 05, 06, 07, 10, 11, 13, 14
Pallas's Fish Eagle	<i>Haliaeetus leucoryphus</i>	IN-BR-03, 05, 07, 11
Greater Spotted Eagle	<i>Clanga clanga</i>	IN-BR-01, 04, 05, 06, 07, 11
Eastern Imperial Eagle	<i>Aquila heliaca</i>	IN-BR-05, 11
Swamp Francolin	<i>Francolinus gularis</i>	IN-BR-10
Sarus Crane	<i>Grus antigone</i>	IN-BR-04, 10
Indian Skimmer	<i>Rynchops albicollis</i>	IN-BR-05, 11

NEAR THREATENED

Oriental Darter	<i>Anhinga melanogaster</i>	IN-BR-01, 03, 04, 05, 06, 07, 08, 11
Painted Stork	<i>Mycteria leucocephala</i>	IN-BR-01, 02, 03, 04, 05, 07, 08, 11
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	IN-BR-03, 04, 05, 07, 10, 11
Black-headed Ibis	<i>Threskiornis melanocephalus</i>	IN-BR-01, 03, 04, 05, 06, 07, 08, 11
Ferruginous Duck	<i>Aythya nyroca</i>	IN-BR-01, 03, 04, 05, 06, 07, 08, 11
Falcated Duck	<i>Mareca falcate</i>	IN-BR-05, 11
Grey-headed Fish-eagle	<i>Icthyophaga ichthyaeus</i>	IN-BR-05, 11
Himalayan Griffon	<i>Gyps himalayensis</i>	IN-BR-10, 11
Great Thick-knee	<i>Esacus recurvirostris</i>	IN-BR-01, 11
River Lapwing	<i>Vanellus duvaucelii</i>	IN-BR-01, 05, 07, 10, 11, 13
Eurasian Curlew	<i>Numenius arquata</i>	IN-BR-01, 04, 05, 06, 07, 11
Bar-tailed Godwit	<i>Limosa limosa</i>	IN-BR-11
River Tern	<i>Sterna acuticauda</i>	IN-BR-03, 04, 05, 07, 08, 11, 13, 14
Alexandrine Parakeet	<i>Psittacula eupatria</i>	IN-BR-01, 05, 07, 10

pressure. The larger wetlands which cannot be drained due to topography, hydrology and annual flooding are intensively fished, leaving no room for wildlife. Community fishing is a part of the culture and during summer, when agricultural activities are reduced, an entire village could be seen fishing. Ingenious nets and traps are used to catch the smallest fish. This leaves very little food for the fish-eating birds. Traditional trapping of birds is another menace for the waterfowl and other species. Although it has been reduced after the State ban, it still goes on in smaller towns and villages, with or without the connivance of the police.

IBAS AND PROTECTED AREAS

Bihar has one national park and 11 wildlife sanctuaries. They cover a total area of 3,28,219 ha. Valmiki is the only tiger reserve in the State. Kabar, situated in Begusarai district, with an area of 6738 ha used to be an important wetland and one of the IBA sites for congregatory and Threatened birds. Of the 12 protected areas of Bihar, four are identified IBAs, namely Valmiki Tiger Reserve, Kabar Lake Wild Life Sanctuary (WLS), Nagi Dam WLS and Nakti Dam WLS and Vikramshila Gangetic Dolphin Sanctuary. There are many IBAs that are not officially protected.

In 2004, eleven sites were identified as IBA (Islam and Rahmani 2004) but after better and recent surveys, five

more sites have been added to this list, totalling up to 16 Important Bird and Biodiversity Areas in Bihar.

AVIFAUNA

A total list of 412 species of birds has been compiled from six sources in the book *Birds of Bihar* (Anon. 2013, 2014). However, this list needs authentication. Proper documentation covering the whole State with professional ornithologists and photo-documentation of difficult-to-identify species is required (as collecting specimens is now not allowed). The Valmiki Tiger Reserve (241 species), Vikramshila Gangetic Dolphin Sanctuary (144 species) and Kavar (=Kabar) Wildlife Sanctuary (146) have very impressive lists of bird species. All of them are IBAs.

The major area of the State comes under the Gangetic Plain, especially the northern part, where many waterbodies exist that attract migratory waterbirds. However, most of them remain unstudied. One of the IBA sites of this region is the Kabar Taal, with a very large congregation of waterbirds during winter months. *Chauras* of north Bihar have many wetlands where more than 100,000 birds used to congregate about 30-40 years ago but most of them are now in pitiable condition.

The key globally Threatened species (IUCN Red List) which are found in the IBAs of Bihar are the Lesser



ARVIND MISHRA

The Indian Army is playing an increasing role in the protection of wildlife. This is best exemplified by a large nesting colony of Asian Openbill *Anastomus oscitans* in Danapur cantonment area in Patna

ASAD RAHMANI



Villagers in a large part of diara (area between two rivers) of Bhagalpur district have traditionally protected Greater Adjutant, which is further enhanced by the intensive campaign by Mandar Nature Club. Tree owners who protect the nests are given certificates of appreciation



BNHS PHOTO LIBRARY

Adjutant *Leptoptilos javanicus*, Pallas's Fish Eagle *Haliaeetus leucoryphus*, White-rumped *Gyps bengalensis* and Long-billed *Gyps indicus* vultures. The Valmiki Tiger Reserve in the *terai* belt bordering Nepal could have significant populations of Swamp Francolins *Francolinus gularis*. There are some records of the Greater Spotted Eagle *Clanga clanga* from Mokama Taal, and the Lesser Kestrel *Falco naumanni* (no more in Red List of IUCN) from the Chauris of Chotanagpur, Danapur and Mokama. These birds are thinly widespread across the country, and are not seen in regular and significant numbers in Bihar.

The IBAs of Bihar are also important for some of the Near Threatened species. The Black-necked Stork *Ephippiorhynchus asiaticus* is one of them. It may not be as uncommon as reported by Rahmani (1989) 25 years ago. It is regularly seen in Gogabil, Mokama and the Valmiki Tiger Reserve. Ferruginous Duck *Aythya nyroca* is an uncommon duck of Asia, considered Vulnerable by BirdLife International (2001) but now shifted to Near Threatened category (BirdLife International 2014). In Bihar, it is seen in Kabar Taal and Gogabil. Other Near Threatened birds seen regularly in the IBAs are mentioned in the Table above.

THREATENED SPECIES FOR WHICH BIHAR IS IMPORTANT

A total of 13 globally Threatened species have been reported from Bihar, but some have only historical records and have not been seen in recent years. The following are found in the IBAs of this State.

Greater Adjutant *Leptoptilos dubius* Endangered

There has been a dramatic increase of the Greater Adjutant in Bihar. The present population is estimated to

be more than 300, making Bihar the second most important state after Assam in India (Rahmani 2012). A breeding colony was found in the Kosi *diara* (floodplain) with 16 nests recorded by the end of January 2007. In 2010-2011, 55 nests were recorded, out of which 40 were successful. Population estimate in 2006-2007 was 78, which swelled to more than 250 in 2010-2011 (Mishra & Mandal 2009).

Lesser Adjutant *Leptoptilos javanicus* Vulnerable

This bird is widely distributed in India from the north, northeast India up to Kerala in the south (Ali and Ripley 1987, Grimmett *et al.* 1998). BirdLife International (2001) has listed it as Vulnerable due to its declining population. In Bihar, it is found in four IBAs: Gogabil, Kusheshwarsthan, Mokama Taal, and Valmiki Tiger Reserve. Choudhary (2006) also reported it from Vikramshila Gangetic Dolphin Sanctuary. Mishra *et al.* (2006) reported breeding of Lesser Adjutants from Ganeshpur Puraini, Uda Kishunganj, Narayanpur, Garhiya Balua Chowk, Semapur and Simraha.

White-rumped Vulture *Gyps bengalensis* and Long-billed Vulture *Gyps indicus* Critically Endangered

Both these vultures have been upgraded to Critically Endangered status because they have suffered an extremely rapid population decline, particularly in the north Indian states, including Bihar (BirdLife International 2014). As in the other states, in Bihar too vultures are still seen in a wide area but not in as many numbers as earlier. Everywhere, their populations have declined almost up to 96% (Prakash *et al.* 2003). In Bihar, they are found in many areas but are regularly reported only near Mokama Taal. However, Choudhary *et al.* (2005) sighted over 20 White-rumped Vultures in Sakrohar village in the floodplain area of the



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Over-fishing all over Bihar is a major issue, like in other parts of India. Nets with very small mesh-size are used (often called mosquito net or zero net) are extensively used in community wetlands, leaving practically no food for birds. This is even done during the breeding season of fish

Kosi river, Khagaria district of Bihar. Also two nests were observed.

Pallas's Fish Eagle *Haliaeetus leucoryphus*
Vulnerable

Similar to the Lesser Adjutant, this wetland-dependent bird has declined all over India (Rahmani 2012). In Bihar, it has been reported only in Mokama Taal, although earlier it was common on most large wetlands (BirdLife International 2001). Even in the Mokama Taal, it is seen neither regularly nor in significant numbers.

Greater Spotted Eagle *Aquila clanga*
Vulnerable

BirdLife International (2001) says that this species has suffered from extensive habitat loss. This bird is very rare in Bihar too. The species is reported from Mokama Taal (Arvind Mishra *pers. comm.* 2003).

Swamp Francolin *Francolinus gularis*
Vulnerable

This Francolin is one of the Vulnerable species that has suffered a rapid population decline because of the destruction of its tall, wet grassland habitat. Trapping and poaching are other major problems (BirdLife International 2001). In Bihar, it has been confirmed only from the Valmiki Tiger Reserve (Javed and Rahmani 1991).

Sarus Crane *Grus antigone*
Vulnerable

This crane has suffered a rapid population decline, which is projected to continue as a result of widespread reductions in the extent and quality of its wetland habitats, exploitation and the effects of pollution (BirdLife International 2001). The Sarus in Bihar has a highly disjunct distribution. It has been reported from the Valmiki Tiger Reserve with a

pair reported nearby in 1999 (Sundar *et al.* 2000).

Black-necked Stork *Ephippiorhynchus asiaticus*
Near Threatened

This species has been listed under Near Threatened by BirdLife International (2014) owing to moderately rapid population decline, which is projected to continue, and it has a moderately small population. Choudhary *et al.* (2010) reported first breeding record of Black-necked Stork from Tintanga village in Bhagalpur district, Bihar.

Asian Woollyneck *Ciconia episcopus*
Vulnerable

This species is listed as Vulnerable because it is suspected to be undergoing a rapid population decline owing mainly to habitat loss and persecution (BirdLife International 2014). Choudhary *et al.* (2013) reported six Asian Woollyneck feeding with egrets and herons in wetlands adjacent to the highway near Kursela in Katihar district and 10 more birds in cultivated fields besides the railway track near Abhaypur, Munger district. Apart from this, one breeding site in Raghapur, Bhagalpur district was also observed.

Biomes

The main biome in Bihar is Biome-12: The Indo-Gangetic Plain. BirdLife International (undated) has identified 13 bird species representing this biome. There is no Endemic Bird Area or Secondary Area in Bihar. Biome-12 has wetlands, moist-marshy grasslands (*terai*) and scrub on marshy ground. Most of this habitat has already been converted into agricultural fields. There are some seasonally flooded wetlands but people use them intensively. The only area where a representative habitat of Biome-12 is still seen, which is also under increasing pressure, is the Valmiki Tiger Reserve in the West Champaran district. While the



ASAD RAHMANI



ASAD RAHMANI

Hunting by nomadic tribes is still a major issue as they kill of types of birds and other animals. As these tribes are very poor, without giving them other livelihood options, the practice cannot be stopped

Swamp Francolin *Francolinus gularis* is likely to be present, the Endangered Bengal Florican *Houbaropsis bengalensis* is perhaps extinct in Bihar (Rahmani *et al.* 1990) with no recent confirmed record.

There are chances of the occurrence of the White-tailed Stonechat *Saxicola leucura*, the Striated Babbler *Turdoides earlei*, the Bristled Grass-Warbler or Grassbird *Chaetornis striatus*, the Rufous-rumped Grassbird *Graminicola bengalensis* and the Black-breasted Weaver *Ploceus benghalensis*. There is no recent record of Jerdon's Bushchat *Saxicola jerdoni*, Jerdon's Babbler *Chrysomma altirostre* and Finn's Baya or Yellow Weaver *Ploceus megarhynchus*.

THREATS AND CONSERVATION ISSUES

Bihar is one of most populous states of India, with a human density of 1,106 persons per sq. km. The governance of the State is reportedly very poor, as a result of which lawlessness prevails in many areas. Therefore, poaching and hunting are quite common. There is hardly any forest left in the densely populated Gangetic Plain. However, there are a large number of flood-plain wetlands but most of them are under severe human pressure.

Hunting and poaching: Hunting takes a heavy toll of the waterfowl populations in most of the IBAs. Trapping of birds on a massive scale by the local fishermen to supplement their income used to be very common (Shahi 1982). Ducks, coot and other waterfowl were trapped at night with fine nylon nets. Although open sale of trapped birds is totally banned now, clandestine sale of birds of an unknown magnitude still goes on. Because the Valmiki Tiger Reserve is contiguous with both the international and interstate boundaries, it is infested with armed dacoits who are involved in the smuggling of Khair *Acacia catechu* and cane. Poaching of the Tiger and its prey is not uncommon. Since the last few years, this problem is much under control.

Livestock grazing: All the IBAs suffer from severe overgrazing. While livestock grazing may not be very damaging to the wetland ecosystems as they need to be grazed, unrestricted grazing and overgrazing are the major problems. Even the Valmiki Tiger Reserve is not free from this menace. Around 60,000 head of livestock are present in the Reserve, which cause severe damage to the flora. The buffer area of the Reserve is very prone to fires caused by the locals whilst grazing their cattle. The fires are set to encourage growth of grass.

Disease transmission to wild animals: Herbivores in many areas, especially in the Valmiki Tiger Reserve, are highly susceptible to iodine deficiency disease, goiter and foot and mouth disease (Jain 2001). Livestock also transmit disease to wild animals.

Wetland drainage: Demands for water for irrigation are increasing, the wetlands are being over-fished and aquatic vegetation is being heavily grazed by domestic livestock. The wetlands are also infested with *Eichhornia crassipes* and contaminated with the run-off of pesticides and fertilizers used by farmers.

Funds and land disputes: The Development Funds allotted by the Central Government to the State government have remained unutilized for many years, and there has been no development of many protected areas of the State. Land disputes are other vital issues. Officials do not know the true ownership of land in many protected areas, especially in the Kabar taal.

Over-fishing: Apart from bird poaching and over-grazing, over-fishing is one of the most important conservation issues in Bihar. Over-fishing in wetlands, including IBAs, has increased many folds because of increase in human population. Local villagers use very fine nets to catch fish in which even very tiny fishes are caught. During the winter months, when migratory waterbirds arrive, the fishing

activity disturbs the birds. There is an urgent need to curb over-fishing and poaching activities in those IBAs which are not officially protected.

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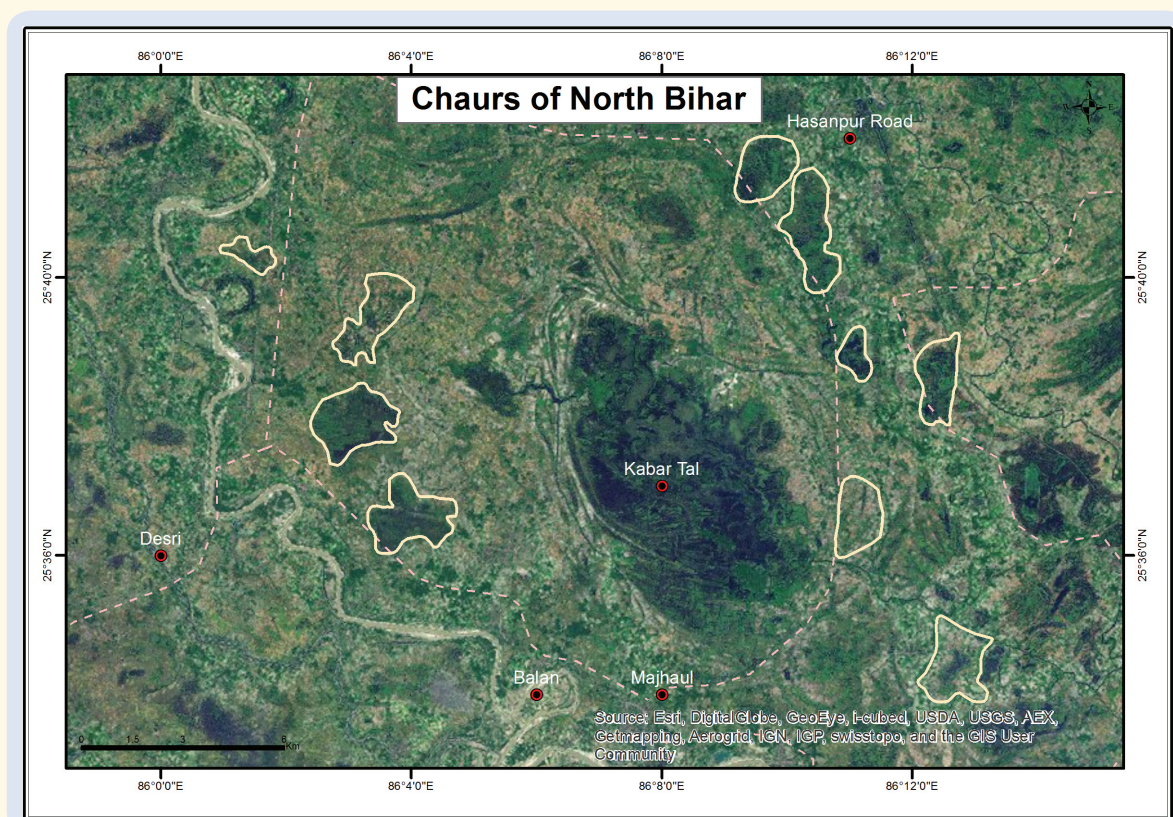
CHAURS OF NORTH BIHAR

IN-BR-01

IBA Site Code	: IN-BR-01	Area	: 4,000,000 ha
State	: Bihar	Altitude	: 30–75 msl
District	: Begusarai, Samastipur, Madhubani, Darbhanga	Rainfall	: 1,325 mm
Coordinates	: See text below	Temperature	: 5 °C to 45 °C
Ownership	: State, Private	Biogeographic Zone	: Gangetic Plain
		Habitats	: Freshwater Swamp, Seasonal Marsh

IBA CRITERIA : A4iii ($\geq 20,000$ waterbirds)

PROTECTION STATUS : Not officially protected.



GENERAL DESCRIPTION

These *chaurs* or small freshwater lakes lie scattered in the Gangetic plain in Bihar. These wetlands are inundated by overflow from the River Ganga and its major tributaries, namely Ghaghra (Karnali), Gandak, Baghmata (Kareh), Burhi Gandak, and Kosi other than the Kamala and Balan, and by rain water. Most of these *chaurs* are between 100 ha and 200 ha, while a few exceed 1,000 ha. They have a maximum depth of 1.5 m during the monsoon, and dry out completely between March and June. As the *chaurs* dry out, the exposed substrate becomes covered with vegetation. The total area and number of wetlands is unknown.

These *chaurs* are particularly abundant around rivers,

larger lakes, and wetlands such as Kavar Lake in Begusarai district, Kusheshwarsthan in Darbhanga and Baraila in Vaishali districts. The *chaurs* around Kavar Lake cover more than 14,000 ha.

There are at least 14 *chaurs* around Kavar Lake, some of the major ones being Nagri Jheel, Bikrampur Chaur, Rajakpur Chaur, Chalki Chaur, Chakka-Matihani Chaur, Malipur-Brahampur Chaur, Rajor Chaur, Dasin-Turki Chaur, Korai-Sajanpur Chaur, and Dunhi Chaur. They are surrounded by paddy fields and other cultivation (Anon. 1993).

There are some larger lakes and *moins* (a sort of oxbow lakes) c. 10 km aerial distance from Kavar Lake which are known for large populations of winter migrant waterbirds

CRITICALLY ENDANGERED

White-rumped Vulture *Gyps bengalensis*

VULNERABLE

Lesser Adjutant *Leptoptilos javanicus*

Greater Spotted Eagle *Clanga clanga*

NEAR THREATENED

Oriental Darter *Anhinga melanogaster*

Black-headed Ibis *Threskiornis melanocephalus*

Eurasian Curlew *Numenius arquata*

Ferruginous Duck *Aythya nyroca*

Painted Stork *Mycteria leucocephala*

Alexandrine Parakeet *Psittacula eupatria*

Rufous-vented Prinia *Prinia burnesii*

and their unabated hunting and trade. These are Pachaila (25° 37.859' N, 86° 16.468' E; c. 11 km east of Kavar Lake) which lies in both Begusarai and Samastipur districts. Sisoni Man (25° 31.084' N, 86° 13.507' E; c. 10 km southeast of Kavar Lake) in Begusarai district. The area of Pachaila Chaur is about half that of Kavar Lake. The horse-shoe shaped Sisoni Man measures c. 1.5 – 2 sq. km, with a depth of c. 4.9 m. When inundated, the *chours* support abundant aquatic vegetation. Dominant emergent vegetation includes *Cyperus rotundus* and *Oryza sativa*. Free-floating plants include *Eichhornia crassipes* and *Pistia stratiotes*, while rooted-floating plants include *Ipomoea aquatica* and *Nymphaea* sp. (Anon. 1993).

AVIFAUNA

The *chours* are known to be extremely important for waterfowl, particularly wintering ducks and waders, besides larks and wagtails.

Recently, a study was done by a team from ZSI Patna and they reported 72 species from 20 *chours* in different districts of north Bihar, namely Turki Chaur (Muzaffarpur) at 26° 02.306' N, 85° 20.201' E; Harpur Machia Chaur (Muzaffarpur) 26° 08.230' N, 85° 22.171' E; Baraila Lake (Vaishali) 25° 44.973' N, 85° 35.216' E; Bhoga Chaur (Madhubani) 26° 17.634' N, 86° 69.900' E; Sarsopahi Chaur (Madhubani) 26° 14.288' N, 86° 10.791' E; Muria Kathwa Chaur (Darbhanga) 26° 11.839' N, 86° 00.208' E; Maran Chaur (Darbhanga) 26° 08.817' N, 85° 59.164' E; Majilsa Pokhar Chaur (Darbhanga) 26° 07.895' N, 86° 01.936' E; Hathia Cole (Khagaria) 25° 31.849' N, 86° 43.101' E; Tin Dobha Chaur (Khagaria) 25° 37.315' N, 86° 43.569' E; Satanpur Chaur Pir Ashthan (Samastipur) 25° 42.263' N,

Species	1% biogeographic population (Wetlands International 2012)
Little Cormorant	2,500
Great Egret	1,000
Asian Openbill	3,000
Black-headed Ibis	250
Ruddy Shelduck	500
Gadwall	3,000



The floodplain wetlands of north Bihar are known as Chours. We have included Chours of four district in this IBA. Even now enormous number of waterfowl are found in the Chours

85° 48.357' E; Matsa Gandha Chaur (Saharsa) 25° 54.274' N, 86° 35.024' E; Ghelar Chaur (Madhepura) 25° 58.863' N, 86° 40.958' E, Samsolia Chaur (Madhepura) 25° 56.948' N, 86° 40.582' E, Rajaura Chaur (Begusarai) 25° 37.225' N, 86° 09.731' E; Karu Gamaul Chaur (Begusarai) 25° 39.129' N, 86° 10.500' E; Pathkaul Chaur (Begusarai) 25° 35.410' N, 86° 09.716' E; Dandari Chaur (Begusarai) 25° 28.139' N, 86° 18.100' E; Naula Chaur (Begusarai) 25° 31.222' N, 86° 02.149' E; Chatar Chaur (Araria) 26° 00 .024' N, 87° 30 .111' E (Sharma 2011). But these are only randomly selected sites from different districts and do not make a complete list. Altogether, the numerous *chaurs* are critical to the survival of hundreds of thousands of ducks and other waterfowl in winter, thus satisfying A4iii criteria of BirdLife International (undated). Sometimes the waterfowl numbers are so huge, that many individual species would easily qualify for A4i criteria. There is an urgent need to gather species-specific and site (*chaur*)-specific data from this IBA.

As this IBA is a complex of temporary through semi-permanent to permanent wetlands in the Gangetic flood plains, it is very difficult to assess its size and boundary. It has a dense human population, so it would not be easy to declare the whole area as an IBA. It is therefore, necessary to identify important *chaurs* or clusters of *chaurs* for intensive protection with the cooperation of the villagers. The *chaurs* are similar to the *hoars* of Bangladesh (BirdLife International 2001) which are also important wintering grounds for large numbers of ducks, egrets, herons, waders, and raptors.

The vast area of *chaurs* in several districts is likely to hold more than 1% geographic population of the bird species listed above.

OTHER KEY FAUNA

Not much information is available on the other fauna of North Bihar Chaur. As these *chaurs* are intensively used by human beings, no large mammal of conservation value is found here. It is unlikely that otters would survive in these *chaurs* which are subjected to intensive fishing.

LAND USE

- Agriculture
- Aquatic crops
- Fishing

THREATS AND CONSERVATION ISSUES

- Poaching
- Agricultural intensification/expansion

- Agricultural run-off
- Eutrophication
- Encroachment
- Lack of study
- Urbanization/industrialization
- Embankments
- Road constructions and widening of roads

Hunting pressure takes a heavy toll on the waterfowl populations. Trapping of birds is undertaken by the local fishermen on a massive scale to supplement their income (Shahi 1982). Ducks, coot, and other waterfowl are trapped at night with fine nylon nets. Most of the smaller *chaurs* have very little value for agriculture or pisciculture.

These *chaurs* and the biodiversity they support remain largely unstudied (Rai & Munshi 1982). It is essential to document, monitor, and conserve these unique wetlands, and to protect the waterfowl and biodiversity they support. Poisoning of birds is increasing all over, and hunting and trapping decimates thousands of birds in a day. On NH 31 near Birbanna Chowk, Bihpur in Bhagalpur district, the sale of migratory ducks, waders, and other indigenous species is a common sight, regardless of the presence of officials. Such birds are also hunted from the adjoining *chaurs* of Ganga river.

KEY CONTRIBUTORS

Arvind Mishra, Gopal Sharma.

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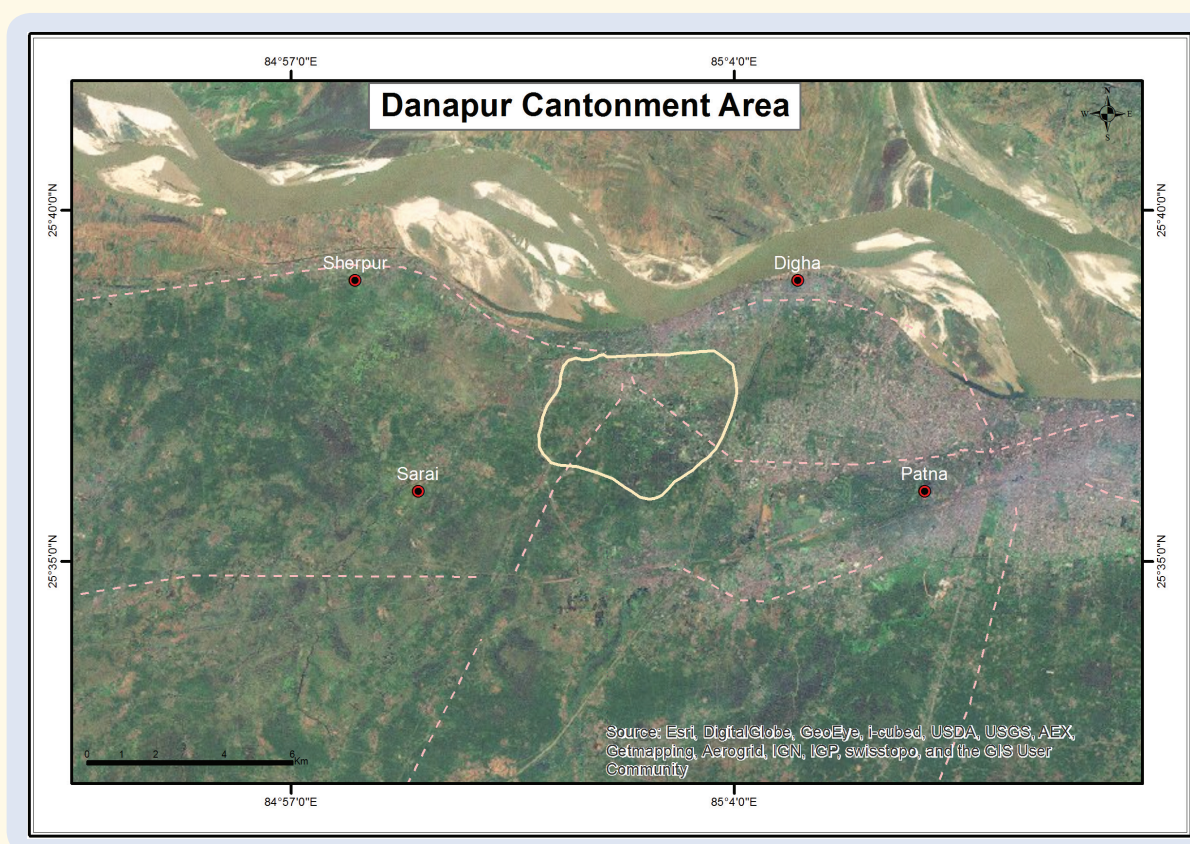
DANAPUR CANTONMENT AREA

IN-BR-02

IBA Site Code	: IN-BR-02	Altitude	: c. 50 msl
State	: Bihar	Rainfall	: 1,100 mm
District	: Patna	Temperature	: 5 °C to 40 °C
Coordinates	: 25° 38' 32" N, 85° 02' 06" E	Biogeographic Zone	: Gangetic Plain
Ownership	: State	Habitats	: Terrestrial plantations (Cantonment establishment)
Area	: 1 sq. km (breeding zone), about 10 sq. km. (foraging zone)		

IBA CRITERIA : A4i (≥1% biogeographic population)

PROTECTION STATUS : Protected by Indian Army.



GENERAL DESCRIPTION

Danapur Cantonment is under the jurisdiction of the Indian Army so it is protected from general human disturbance. It is considered as an IBA because more than 7-8 thousand Asian Openbill *Anastomus oscitans* breed here (Choudhury *et al.* 2008). The Army personnel and the civilians of the area consider them auspicious as they bring rain and prosperity.

This breeding site is located c. 1 km from the course of the River Ganga. The birds rest and nest in the Army campus, their residential colonies and official establishments. In the adjacent land, there are some waterlogged areas which

are cultivated. Birds use these areas as feeding grounds, along with mudflats and waterlogged areas along the Ganga river.

Important trees found at the site are *Mangifera indica*, *Ficus religiosa*, *F. bengalensis*, *F. glomerata*, *Acacia nilotica*, *Syzygium cumini*, *Tamarindus indica*, *Acanthocephalus indicus*, and *Dalbergia sissoo*.

AVIFAUNA

The area is a permanent nesting site for over 7-8 thousand Asian Openbill. The South Asian breeding population of the Asian Openbill is calculated as 300,000 (Wetlands



ARVIND MISHRA



ARVIND MISHRA

More than 7,000 Asian Openbill *Anastomus oscitans* breed in Danapur Cantonment. It is credit to the Indian army that they protect one of the largest nesting colonies of this bird in India

International 2012) and the 1% threshold is 3,000 which means that at this IBA site, nearly 3% of the breeding population of the Asian Openbill is found. Painted Stork *Mycteria leucocephala*, a Near Threatened species, also breeds in the nesting colony of Asian Openbill. Other birds seen are cormorants, egrets, bulbuls, owls, doves, parakeets, and raptors.

NEAR THREATENED

Painted Stork

Mycteria leucocephala

OTHER KEY FAUNA

Nilgai *Boselaphus tragocamelus*, Indian Grey Mongoose *Herpestes edwardsii*, and snake species are observed in the area.

LAND USE

- Military

THREATS AND CONSERVATION ISSUES

- Cutting of nesting trees
- Poaching of birds in their feeding grounds in the adjacent areas

The site remains well protected as it is under the jurisdiction of the Indian Army. It may be mentioned here that Danapur is one of the oldest cantonments in the country. During the British regime, a special doctor used to be deployed here to take care of these migratory birds.

The residents of the cantonment and the Department of Environment & Forests, Patna Division undertake plantation activities. Educational institutions take their students for birding in the area to generate awareness. This breeding site is so popular that many high officials, including the Chief Minister, visit it to observe the Asian Openbill. For more than a decade, Mandar Nature Club has been advocating through the media and newspapers that these are not migratory birds, even so the media and citizens, including well qualified people, always refer to them as Siberian Cranes.

KEY CONTRIBUTORS

Arvind Mishra, Mandar Nature Club, Anjali Bharthari, Danapur Cantonment, Gopal Sharma (ZSI)

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Link

<http://timesofindia.indiatimes.com/city/patna/Winged-visitors-flock-to-Danapur-Cantonment-area/articleshow/14789478.cm>

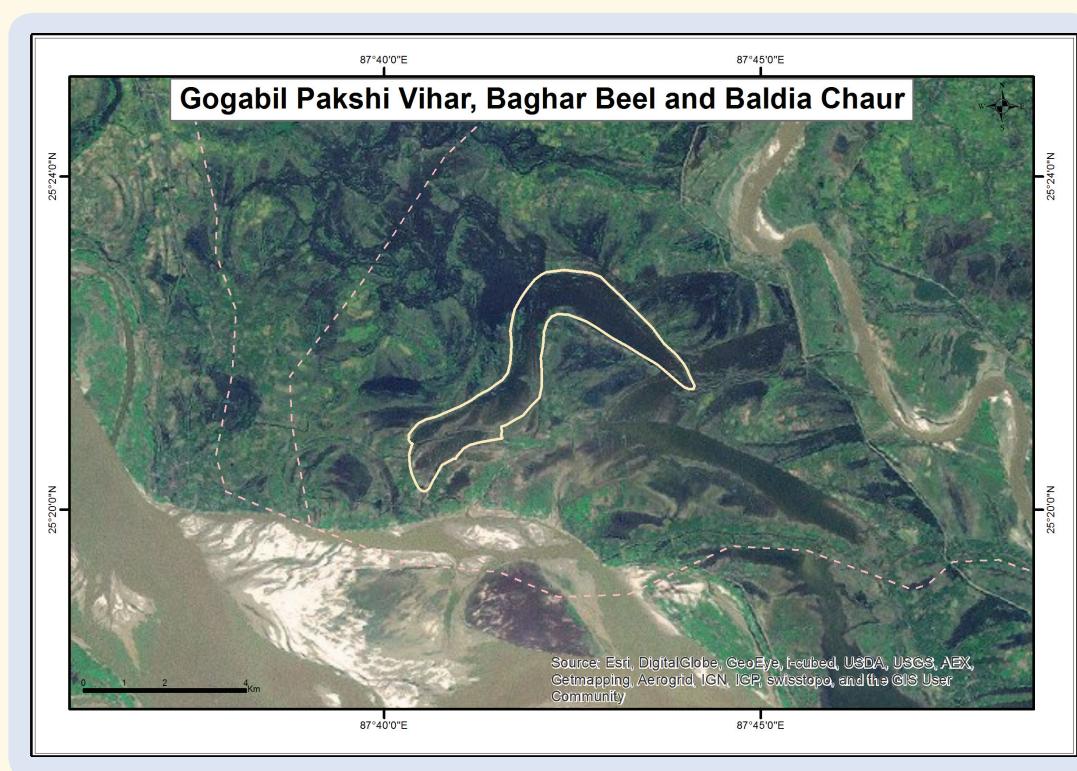
GOGA BEEL PAKSHI VIHAR, BAGHAR BEEL AND BALDIA CHAUR

IN-BR-03

IBA Site Code	: IN-BR-03	Ownership	: State and Private
State	: Bihar	Area	: 400 ha
District	: Katihar	Altitude	: 26 m.
Coordinates	: Goga Beel 25° 21.737' N, 87° 41.195' E; West bank 25° 22.675' N, 87° 41.364' E. Baghar Beel 25°0 21.320' N, 87° 40.570' E. Baldia Chaur 25° 20.589' N, 87° 37.447' E	Rainfall	: 1300 mm
		Temperature	: 80 – 430 c
		Biogeographic Zone	: Gangetic Plain
		Habitats	: Freshwater Lake, Swamp

IBA CRITERIA : A1 (Threatened species), A4iii (≥20,000 waterbirds)

PROTECTION STATUS : Not officially protected.



GENERAL DESCRIPTION

Goga Beel (88 ha) was initially notified as a closed area for five years in 1990, which was further extended up to the year 2000, but thereafter the notification has not been extended and in 2002, the provision of Closed Area was omitted from the Wildlife (Protection) Act, 1972. About one third of the land of Goga Beel is government land and the rest comes under private ownership.

The site is situated c. 33 km southeast of Katihari in Amdabad block. The lake is fed by flood waters. Goga Beel is a permanent waterbody, however the level of water varies seasonally. This waterbody is surrounded by many other temporary wetlands. Goga Beel is c. 8 km from Manihari,

and from 2.5 km onwards on the Manihari-Goga Beel road, wetlands exist on either side of the road. There are many small and large waterbodies at Balu Tola, Tarupbanni Baihar, and Babupur, which are very rich in birds.

The monsoon floodwaters from Goga Beel form two wetlands, namely Baghar Beel and Baldia Chaur. These wetlands are inundated by overflow from the Ganga river to the south and east, and in the north from Kankhar river which is linked to Mahananda river Baldia Chaur is more shallow than Baghar and is only seasonal. Baghar Beel is c. 28 km southeast of Katihar. Its waterspread is 400 ha in the monsoon, and is reduced to 25 ha in summer. These *chaurs*

JANLAKSHYA



Along with many small floodplain wetlands Goga Beel attracts more than 20,000 birds including Vulnerable species such as Lesser Adjutant *Leptoptilos javanicus* and Pallas's Fish-eagle *Haliaeetus leucoryphus*

or *beels* are oxbow lakes marking the historical course of Kankhar river.

As the *chaurs* dry out, the exposed mud becomes covered with grasses and creepers. The greater part of the exposed lake bed is then brought under cultivation. Water from these wetlands is used for irrigation and domestic purposes.

AVIFAUNA

About 100 bird species have been recorded from this site, of which two are Vulnerable, six are Near Threatened, and six are biome-restricted species. The site falls in Biome 12 (Indo-Gangetic Plains); one species of Biome 11 (Indo-Malayan Tropical Dry Zone) is also reported from the site (A. Mishra, *in litt.* 2002). During years of good monsoon, when the waterspread is extensive, more than 20,000 waterfowl are likely to be present in all these wetlands. Not much work has been conducted on the waterfowl numbers, species composition, density, and population fluctuation. Ringing information is also not available.

Some interesting bird species of this IBA are Red Munia *Estrilda amandava*, Northern Lapwing *Vanellus vanellus*, Spot-billed Duck *Anas poecilorhyncha*, Black-naped Monarch *Hypothymis azurea*, and Glossy Ibis *Plegadis falcinellus*, which are not commonly seen in other sites of Bihar. Black-headed Ibis *Threskiornis melanocephalus* are seen in large flocks, meeting the criteria of 1% biogeographic population

in India as given in Wetlands International (2012). The Vulnerable Lesser Adjutant *Leptoptilos javanicus* breeds in this IBA, and there is a possibility of the Endangered Greater Adjutant *Leptoptilos javanicus* breeding in the vicinity.

OTHER KEY FAUNA

There are historic records of shooting of Rhino *Rhinoceros unicornis* and Tiger *Panthera tigris* from this area. Hog Deer *Axis porcinus* and crocodiles were also found here in earlier days. Indian Monitor Lizard *Varanus monitor*, Golden Jackal *Canis aureus indicus*, and Indian Grey Mongoose *Herpestes edwardsii* are the common vertebrates. Benthic fauna is available but has not been adequately studied. Crustaceans which serve as food for birds like large flocks of Asian Openbill *Anastomus oscitans* are plentiful. Fish species include Rohu, Katla, Garai, Gajali, and Silver Carp.

VULNERABLE	
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Pallas's Fish-eagle	<i>Haliaeetus leucoryphus</i>
NEAR THREATENED	
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Black-headed Ibis	<i>Threskiornis melanocephalus</i>
Ferruginous Duck	<i>Aythya nyroca</i>
Painted Stork	<i>Mycteria leucocephala</i>
Oriental Darter	<i>Anhinga melanogaster</i>
River Tern	<i>Sterna aurantia</i>



A bird survey being conducted by Arvind Mishra of Mandar Nature Club and Ian Barbar of RSPB

LAND USE

- Agriculture
- Fishing
- Irrigation

THREATS AND CONSERVATION ISSUES

- Trapping of birds
- Poaching
- Illegal bird trade
- Agricultural pesticides runoff
- Land disputes
- Leasing out of the site for fishing

Leasing out of the site by the district administration for fishing has been a major issue. Hunting, poaching, and bird trade are no longer common practices. Agricultural pesticide run-off, land reclamation, and non-settlement of land disputes are other problems that need to be addressed.

The site is being regularly visited by the members of Mandar Nature Club (MNC) and Zoological Survey of

India, Patna. MNC is playing a key role in motivating the local villagers who are very enthusiastic, welcoming, and friendly, and are willing to conserve this wetland and its avifauna. They are in favour of developing the site as a Community Reserve and as an ecotourism destination. A local NGO, Janlakshya, based at the district headquarters of Katihar, has taken many initiatives to popularize Goga Beel and protect its birds and habitat in collaboration with MNC. Advocacy at district and state level continues with the hope that this wetland will be protected and developed into an important ecotourism destination.

KEY CONTRIBUTORS

Arvind Mishra and Janlakshya (Local NGO)

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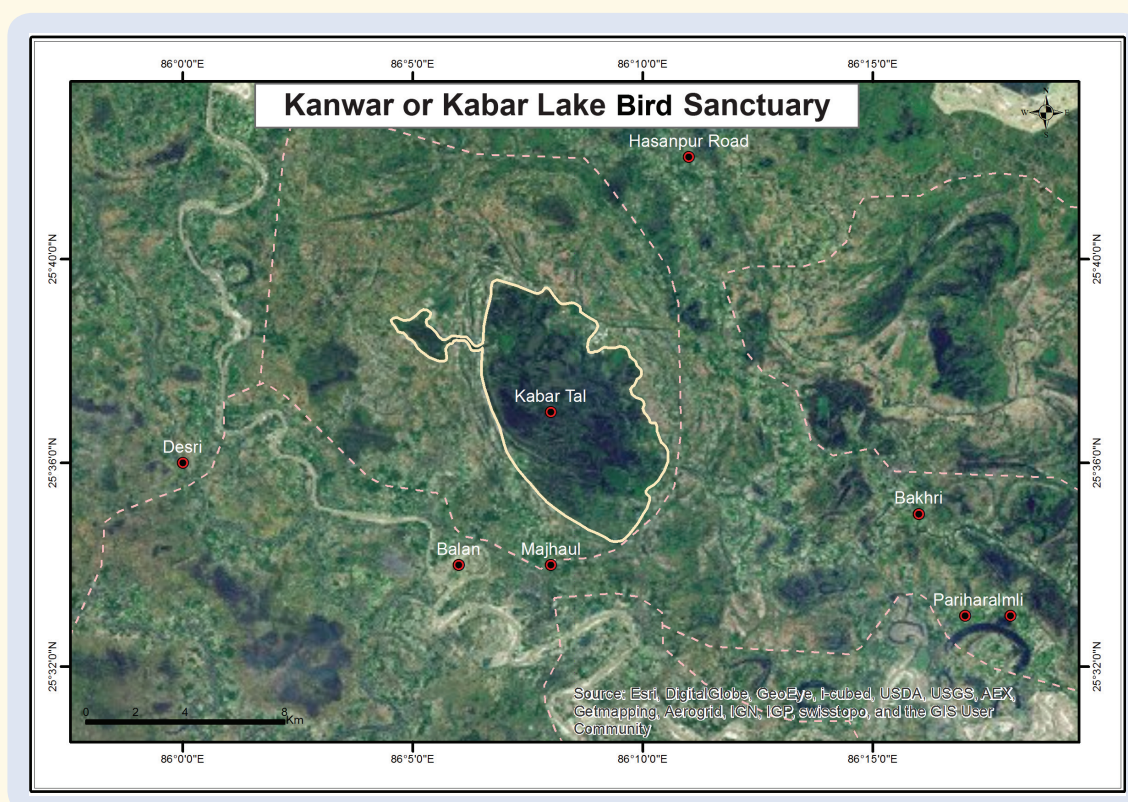
KANWAR LAKE BIRD SANCTUARY

IBA Site Code	: IN-BR-04	Altitude	: 45 msl
State	: Bihar	Rainfall	: 1,384 mm
District	: Begusarai	Temperature	: 5 °C to 45 °C
Coordinates	: 25° 36.368' N and 86° 09.421' E	Biogeographic Zone	: Gangetic Plain
Ownership	: State	Habitats	: Freshwater Swamp, Seasonal Marsh, Subtropical Secondary Scrub
Area	: c. 6,311 ha		

IN-BR-04

IBA CRITERIA : A1 (Threatened species), A4iii ($\geq 20,000$ waterbirds)

PROTECTION STATUS : Bird Sanctuary, established in June 1989.



GENERAL DESCRIPTION

Kanwar Lake Bird Sanctuary (or Kabar Taal), also a potential Ramsar Site, is the largest freshwater lake in Bihar, 22 km northeast of the district headquarters, Begusarai, and 6 km from Manjhaul. It is a residual oxbow lake formed by the changing course of the River Burhi Gandak, a tributary of the Ganga. In years of average rainfall, Kanwar Lake joins up with the nearby Nagri Lake, Bikrampur Chaur (lake), and Burhi Gandak, a tributary of the River Ganga, to form a lake of about 7,400 ha. By late summer, however, the water is confined to the deeper areas of only c. 200 to 300 ha. As the water level recedes, over 2,400 ha of exposed mudflats are converted into paddyfields. There is a c. 130 ha permanent island,

Jaimanglagarh, in the southeast corner of the lake. This island is also known as Monkey Island where hundreds of Rhesus Macaque *Macaca mulatta* are thriving. The island is a place of worship where the famous Jaimangla temple dedicated to goddess Durga is situated. During excavation, terracotta glazed ware, iron sickles, and other articles were found, indicating the historical and archaeological importance of the site.

Kanwar Lake experiences tropical monsoon climate typical of the middle Gangetic Plain. It receives water from the overflow of River Burhi Gandak as well as rainfall. There are about 14 *chours* (small freshwater lakes) around Kanwar Lake, such as Nagri Jheel, Bikrampur Chaur, Rajakpur Chaur, Chalki Chaur, Chakka/Matihani Chours, Malipur/

Brahampur Chaur, Rajor Chaur, Dasin/Turki Chaur, Korai/Sajanpur Chaur, and Dunhi Chaur. Previously, all the *chaur*s were connected with the lake through a drainage canal built in 1951, known as the Nagri-Goriyari canal, which passes through Kanwar Lake via Gua Bari (locally called Gua river) at the north-west point of the lake, and then connects to the Bagras Nala (part of the canal) on its south-eastern end which is the main exit point of Kanwar lake. Bagras Nala joins the Burhi Gandak river some 12 km away from Kanwar lake. This drainage system was functional for about 15 years and then became non-functional due to siltation. In 1987, the canal bank was broken due to heavy rain, which led to the free discharge and undesirable loss of water, that is continuing till date (Management Action Plan, 2004–05 to 2008–09). Some 11 km away from Manjhaul on the main road towards Cheriya Bariyarpur is located the Basahi Dam on Burhi Gandak river. In August 2007, this dam too was breached and Kanwar Lake was completely flooded.

There are many islands inside the lake, namely Bandheri, Jori, Dashrath, Dhanfarh, Mahadewa, Bhorahi, Kochalaya, Mahalaya, Kataha and Chatar. These islands are planted with Sheesham *Dalbergia sissoo*, Arjun *Terminalia arjuna*, Jamun *Syzygium cumini*, Babool *Acacia*

nilotica, *Barringtonia asiatica*, Shahtoat *Morus alba*, and *Trewia nudiflora* (Management Action Plan, 2004–05 to 2008–09).

The lake supports rich and diverse aquatic flora. Submerged macrophytes include *Hydrilla verticillata*, *Potamogeton crispus*, and *Najas minor*. Emergent macrophytes include *Oryza sativa* and *Ipomoea aquatica* (Anon. 1993). The predominant weeds now are *Phragmites karka* and Motha Grass *Cyperus pilosus*, locally called *Katma*. *Phragmites* is a severe problem as it is choking the lake. The rhizomes and roots of these weeds are set 39–59 cm deep in the earth. Other aquatic plant species are Bladderwort *Utricularia*, *Hydrilla verticillata*, Hairy Water Lily *Nymphaea pubescens* and Blue Water Lily *N. stellata*, Lotus *Nelumbo nucifera*, Narkat *Phragmites karka*, and *Enhydra* sp.

AVIFAUNA

The lake is eutrophic, sustaining rich plant and animal life, and teeming with waterfowl (George 1964). Kanwar is one of the most important wetlands for waterfowl in the Indo-Gangetic Plains. It used to support huge numbers of migratory ducks and Eurasian Coot *Fulica atra* through the winter, as well as large concentrations of resident species



JANAKSHYA

Upto 1980s hundreds of thousands of waterfowls used to visit Kanwar Lake complex. Huge bird trapping used to take place. Since the last 20 years extensive encroachment based on political support and intensive fishing have resulted in drastic decrease in bird numbers



JANLAKSHYA

Kanwar is a Bird Sanctuary and a potential Ramsar Site and the largest freshwater lake in Bihar. Wetland International South Asia has prepared an intergrated managment plan for the wise use of Kanwar Lake which will benefit local communities and also waterfowl

such as Lesser Whistlingduck *Dendrocygna javanica* and Fulvous Whistlingduck *Dendrocygna bicolor*, Little Grebe *Tachybaptus ruficollis*, and Asian Openbill *Anastomus oscitans*. Some other interesting species are Yellow Bittern *Ixobrychus sinensis* and Stork-billed Kingfisher *Halcyon capensis*. The Near Threatened Black-headed Ibis *Threskiornis melanocephalus*, and Ferruginous Duck *Aythya nyroca* (Arvind Mishra, *pers. comm.* 2001) are seen. About 26 species of birds including Baillon's Crane

Porzana pusilla, Fantail Snipe *Gallinago gallinago*, Ruff *Philomachus pugnax*, and Grey-headed Lapwing *Vanellus cinereus* were ringed here during a BNHS bird ringing camp in 2000 (Arvind Mishra *pers. comm.* 2001).

The record of Rufous-vented Prinia *Prinia burnesii* needs reconfirmation with better evidence and good images. As the bird was seen and photographed in Kosi-Tapu Wildlife Reserve of Nepal (Inskipp 2006), it is likely to be present in Kanwar also.

It is difficult to estimate the number of waterfowl found in Kanwar as no systematic study has been conducted, but every year more than 20,000 waterbirds are certainly found here, thus fulfilling A4iii criteria of BirdLife International (undated). However, in recent years, there has been a steep decline in these numbers, mainly due to human disturbance such as intensive fishing.

S.P. Shahi (*pers. comm.* to Salim Ali) estimated that c. 70,000 birds were trapped every year till the early 1980s. Manjhol town was a major bird market and a centre for distribution to other areas. Since the declaration of the sanctuary in 1989, bird trapping has reduced considerably but has been replaced by poisoning.

Both White-rumped *Gyps bengalensis* and Long-billed *Gyps indicus* Vultures were common at one time but now only stray birds are seen.

CRITICALLY ENDANGERED

White-rumped Vulture	<i>Gyps bengalensis</i>
Long-billed Vulture	<i>Gyps indicus</i>

ENDANGERED

Black-bellied Tern	<i>Sterna acuticauda</i>
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VULNERABLE

Greater Spotted Eagle	<i>Clanga clanga</i>
Sarus Crane (?)	<i>Grus antigone</i>
Lesser Adjutant	<i>Leptoptilos javanicus</i>

NEAR THREATENED

Oriental Darter	<i>Anhinga melanogaster</i>
Painted Stork	<i>Mycteria leucocephala</i>
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Black-headed Ibis	<i>Threskiornis melanocephalus</i>
Ferruginous Duck	<i>Aythya nyroca</i>
Eurasian Curlew	<i>Numenius arquata</i>
River Tern	<i>Sterna aurantia</i>

OTHER KEY FAUNA

Other fauna of Kanwar Lake IBA includes Nilgai *Boselaphus tragocamelus*, Golden Jackal *Canis aureus*, Indian Grey Mongoose *Herpestes edwardsii*, Rhesus Macaque *Macaca mulatta*, Black-naped Hare *Lepus nigricollis*, Indian Cobra *Naja naja*, Rat Snake *Ptyas mucosa*, water snakes, Monitor Lizard *Varanus bengalensis*, Indian Pangolin *Manis crassicaudata*, and Indian Crested Porcupine *Hystrix indica*.

Over 29 species of commercially valuable fish have been recorded from the lake. Major fish species are Chelwa *Oxygaster* sp., Pothia *Puntius* sp., Tengra *Mystus* sp., Singhi *Heteropneustes fossilis*, Garai *Channa punctatus*, Bami *Mastacembelus armatus*, Rohu *Labeo rohita*, and Katla *Catla catla*. The edible mollusc *Pila globosa*, the main food of Asian Openbill, is abundant.

LAND USE

- Water management
- Irrigation
- Fishing
- Grazing of livestock
- Agriculture
- Collection of fodder, construction material, and food in the form of rhizomes and crustaceans

THREATS AND CONSERVATION ISSUES

- Land dispute
- Inadequate attention from government
- Agricultural intensification and expansion
- Drainage of wetland
- Grazing of livestock
- Poaching
- Invasion by exotic species
- Pollution

The lake faces frequent droughts, when the major part of the lake is encroached upon by cultivators of mustard, maize, and other seasonal crops, who use large quantities of pesticides and insecticides, and drive motorcycles, bicycles, and horses in the protected area. They graze their sheep, goats, cows, and buffaloes. The Sahnis depend on fishing for their livelihood, and other poor communities around the lake depend on the rhizomes, fruits, and leaves of different aquatic species growing in the lake. The people also drain the lake by pumping the residual water for irrigation.

The lake is very important for fisheries. Inhabitants of about 15 villages around the lake depend on the wetland resources for their livelihood. Duck trapping was a major occupation of many villagers. Shahi (1982) estimated that 70,000 ducks, coot and other waterfowl were netted and sold in the winter of 1981–1982. Now trapping on this scale has been stopped, but has been replaced by poisoning of waterfowl. Dead and wounded fish on the water surface

along with dead birds are a common sight (Mehboob Alam, pers. comm., 2003).

Demands for water for irrigation are increasing, the lake is overfished and the aquatic vegetation is heavily grazed by domestic livestock. The lake is heavily infested with *Phragmites karka*, *Cyperus pilosus*, and *Eichhornia crassipes*, and contaminated with run-off of pesticides and fertilizers used by farmers.

The major issue at Kanwar is the dispute between the politicians and landlords, and the fishermen, local people, and NGOs. A few powerful politicians and landlords are putting pressure on the Government to convert the wetland into agricultural land by draining out the lake. They discourage efforts towards clearing the lake of the vegetation that is choking it and threatening its existence. However, villagers use the emergent weeds as fodder or for thatching of houses.

A very small initiative for dewatering the lake was taken by the State Department of Environment and Forests in 2010–2011. Due to land disputes, even the officials do not know the true ownership of the land in the sanctuary.

RECENT DEVELOPMENT

Advocacy for the protection of Kanwar lake is being continued by Arvind Mishra of Mandar Nature Club, Bhagalpur, who has taken this issue up to the level of Chief Secretary and Chief Minister through the State Board for Wildlife. IBCN-BNHS had organized a Workshop on Birds and their Habitat: Issues and Legal Provisions at Patna on August 16, 2014. A Management Plan for the sanctuary is being prepared since 2013 by Wetlands International, sponsored by the World Bank (WISA 2013). Almost the whole area of Kanwar Lake was claimed by the local people as their land. After settling this land dispute, only a very small part of the lake, 1,527 acres, has been declared unclaimed, meaning that it is government land.

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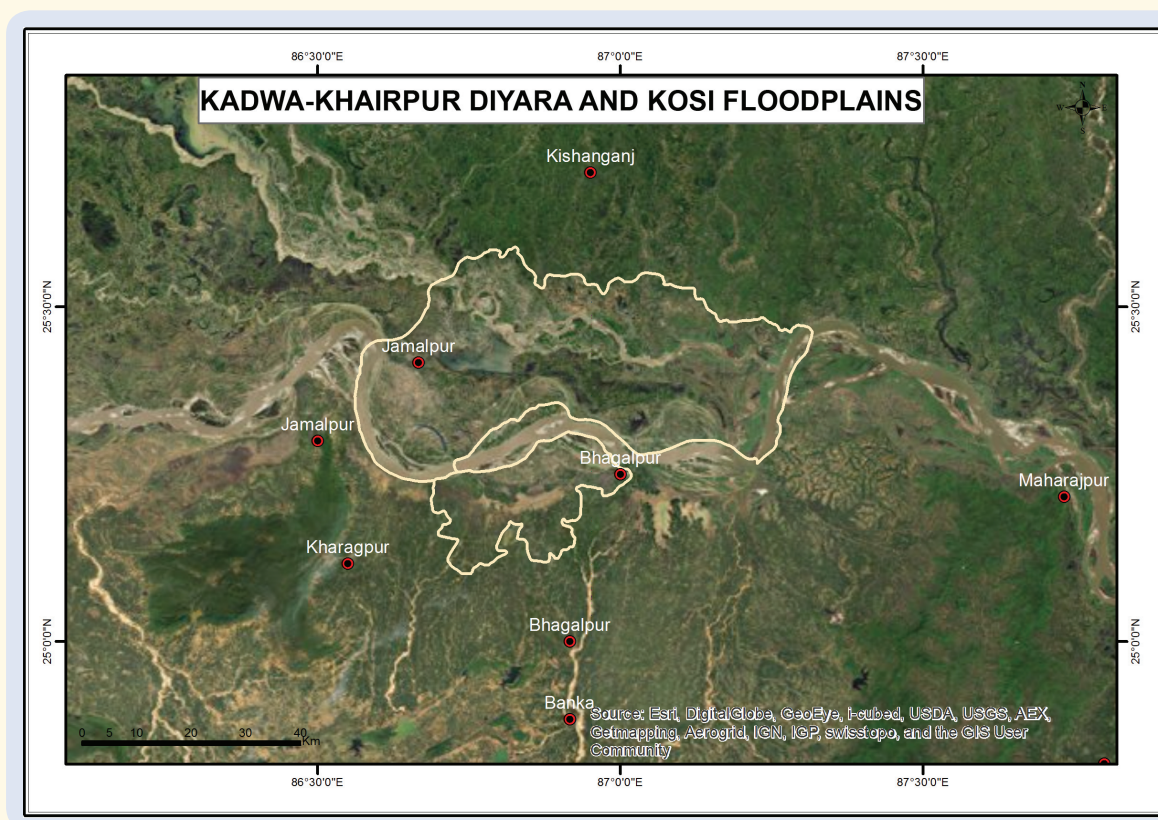
KADWA-KHAIRPUR DIYARA AND KOSI FLOODPLAINS (OLD NAME: KURSEALA RIVER COURSE AND DIYARA FLOODPLAIN)

IBA Site Code	: IN-BR-05	Ownership	: State/Private
State	: Bihar	Area	: Not available
District	: Katihar	Altitude	: 36 msl
Coordinates	: Breeding zone: 25° 26.549' N to 25° 28.481' N and 87° 02.499' E to 87° 03.688' E; Foraging zone: 25° 33.212' N to 25° 15.437' N and 86° 50.897' E to 87° 15.254' E	Rainfall	: >1,000 mm
		Temperature	: 5 °C to 45 °C
		Biogeographic Zone	: Gangetic Plain
		Habitats	: Freshwater Swamp, Seasonal Marsh

IN-BR-05

IBA CRITERIA : A1 (Threatened species), A4iii (≥20,000 waterbirds)

PROTECTION STATUS : Not officially protected.



GENERAL DESCRIPTION

Two *Panchayats* (village councils) of Naugachhia sub-division in Bhagalpur district, north of the Kosi river, namely Kadwa Diyara and Khairpur, are the natural breeding grounds of Greater Adjutant *Leptoptilos dubius*. About 10 km north of River Ganga is national highway NH 31 and 5 km further north of NH 31 flows the Kosi river. Kadwa and Khairpur are located across the Kosi. Towards east, the Kosi river drains into the Ganga at Kurseala (district Katihar), which is the regular foraging ground of

Greater Adjutant and Lesser Adjutant *Leptoptilos javanicus*. Kurseala can be reached by road along a distance of 18 km from Naugachhia on NH-31. The wetlands and cultivated lands on either sides of NH 31 between Naugachhia and Kurseala, south of the Kosi and north of the Ganga are again the important foraging grounds for these two adjutant species, along with the Black-necked Stork *Ephippiorhynchus asiaticus*, Asian Woollyneck *Ciconia episcopus*, Asian Openbill *Anastomus oscitanus*, and various wader species. This breeding zone of Greater Adjutant extends beyond



ASAD R. RAHMANI

Diyara floodplain in Katihar district is the second most important site in India for the Greater Adjutant *Leptoptilos dubius*. Presently, the population is nearly 400 individuals

the limits of Bhagalpur district into Madhepura district. They are seen foraging up to Chandpur (Katihar district).

AVIFAUNA

The site is being studied regularly since 2007 when the breeding colony of Greater Adjutant was discovered (Mishra & Mandal 2009). The breeding of two pairs was first reported from Naya Tola, Motichak near Sultanganj in Bhagalpur district, south of the Ganga river, in October 2006. The nests were dismantled later in January 2007. A breeding colony was found in the Kosi *diyara* (floodplain) with 16 nests recorded by the end of January 2007. In 2010–2011, 55 nests were built, 50 in Kosi *diyara* and five in Ganga *diyara*, out of which 40 were successful. The population estimate in 2006–2007 was 78, which rose to more than 250 in 2010–2011 (Mishra & Mandal 2009, Mishra *et al.* 2010). Presently, the population is nearly 400 individuals (Arvind Mishra, *pers. comm.* 2014).

This IBA site is the same general area where in April 1988, Rahmani *et al.* (1990) had seen six Greater Adjutant from the road. Now the bird is seen breeding in a large area on tall trees growing amidst crop field and near villages. This IBA site, therefore, includes the breeding zone and foraging zone of Greater Adjutant specifically.

The breeding zone lies in between 25° 26.549' N to 25° 28.481' N and 87° 02.499' E to 87° 03.688' E in Kadwa *diyara*, Khairpur *panchayat* of Bhagalpur district, and Bhatgama *panchayat* of Madhepura district in the Kosi *diyara*. On the larger scale, their foraging ground is spread over the four districts of Bhagalpur, Madhepura, Katihar, and Khagaria.

Among the Critically Endangered species, the White-rumped Vulture *Gyps bengalensis* was extremely common till the 1990s, but now it is almost gone. The same is the case with the Pallas's Fish-eagle *Haliaeetus leucoryphus*. However, the Lesser Kestrel *Falco naumanni*, which at one time was considered Threatened by BirdLife International, is often seen during migration. Among other interesting species, Eurasian Thick-knee *Burhinus oedipnemos* was found breeding in the Kosi *diyara* in April 2014 (Arvind Mishra & Paul Donald, *pers. comm.* 2014).

Many globally threatened species that frequent and breed in the zone are Greater Adjutant, Lesser Adjutant, Black-necked Stork *Ephippiorhynchus asiaticus* and Painted Stork *Mycteria leucocephala*. All the six Indian resident stork species breed in the floodplains north and south (towards Ganga river) to the Kosi river (Arvind Mishra *pers. comm.* 2014).

In the Ganga river course of Vikramshila Gangetic Dolphin Sanctuary, Bhagalpur (another IBA), all the above-mentioned

ENDANGERED

Greater Adjutant	<i>Leptoptilos dubius</i>
Black-bellied Tern	<i>Sterna acuticauda</i>

VULNERABLE

Lesser Adjutant	<i>Leptoptilos javanicus</i>
Asian Woollyneck	<i>Ciconia episcopus</i>
Pallas's Fish-eagle	<i>Haliaeetus leucoryphus</i>
Greater Spotted Eagle	<i>Clanga clanga</i>
Eastern Imperial-eagle	<i>Aquila heliaca</i>
Indian Skimmer	<i>Rynchops albicollis</i>

NEAR THREATENED

Oriental Darter	<i>Anhinga melanogaster</i>
Painted Stork	<i>Mycteria leucocephala</i>
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Black-headed Ibis	<i>Threskiornis melanocephalus</i>
Ferruginous Duck	<i>Aythya nyroca</i>
Falcated Duck	<i>Anas falcata</i>
Grey-headed Fish-eagle	<i>Ichthyophaga ichthyaetus</i>
Eurasian Curlew	<i>Numenius arquata</i>
River Lapwing	<i>Vanellus duvaucelii</i>
River Tern	<i>Sterna aurantia</i>
Alexandrine Parakeet	<i>Psittacula eupatria</i>
Rufous-vented Prinia(?)	<i>Prinia burnesii</i>

species are observed regularly, except the White-rumped Vulture nowadays. For example, 53 individuals of Greater Adjutant were recorded in Vikramshila Gangetic Dolphin Sanctuary in May 2006 (Choudhary & Mishra 2006).

The site is also thought to hold on a regular basis over 20,000 waterbirds (Arvind Mishra, *pers. comm.* 2001).

OTHER KEY FAUNA

The Endangered Gangetic Dolphin *Platanista gangetica* inhabits the rivers. Indian Monitor Lizard *Varanus bengalensis*, Nilgai *Boselaphus tragocamelus*, Wild Boar *Sus*

The following species were found much above their 1% population threshold as mentioned by Wetlands International (2012)

Species	1% biogeographic Population in India 2012
Black-necked Stork <i>Ephippiorhynchus asiaticus</i>	10
Lesser Adjutant <i>Leptoptilos javanicus</i>	50
Greater Adjutant <i>Leptoptilos dubius</i>	7
Red-naped Ibis <i>Pseudibis papillosa</i>	100
Greylag Goose <i>Anser anser</i>	250
Ruddy Shelduck <i>Tadorna tadorna</i>	500
Gadwall <i>Anas strepera</i>	3000
Red-crested Pochard <i>Aythya rufina</i>	1000
Small Pratincole <i>Glareola lactea</i>	750
Little Tern <i>Sterna albifrons</i>	750
Indian Skimmer <i>Rynchops albicollis</i>	80

scrofa, Golden Jackal *Canis aureus*, Indian Grey Mongoose *Herpestes edwardsii*, and different species of turtles and snakes are also found in the area.

LAND USE

- Agriculture
- Fishing
- Villages (human habitations)

THREATS AND CONSERVATION ISSUES

- Poaching and poisoning of birds in the foraging ground
- Agricultural intensification and expansion
- Human disturbance
- Felling of trees
- Major road construction



The success of conservation of Great Adjutant is mainly due to the support of local people who even take care of the fallen and injured juveniles

This IBA is specifically important as the third breeding ground of Greater Adjutant in the world, other than Cambodia and Assam. Only 800–1,200 individuals of this species remain globally. This is the only site where the population of Greater Adjutant is increasing. In 2006–2007, their population was estimated as 78 only, which has flourished up to 400 in 2014. This is one among the few rare successes of conservation efforts in the world. The local nomadic tribe Gulgulwas were the greatest threat, other than the felling of large trees. The tribal used to kill the birds and steal their eggs. This conservation success story is a unique achievement of the Bhagalpur-based NGO, Mandar Nature Club, and the local community of Kosi floodplains. Right from



ASAD R. RAHMANI

Arvind Mishra, State Coordinator of IBCN and Secretary of Mandar Nature Club is instrumental in protecting the Greater Adjutant in collaboration with the local people

the time of discovery of this breeding ground, Wildlife Trust of India (WTI) and BNHS-IBCN have helped in this work through projects and technical support, and now RSPB is supporting the protection of this species through a project assigned to Mandar Nature Club. Now, the Departments of Environment and Forests and Animal Husbandry of the Government of Bihar are also showing interest in the conservation of Greater Adjutant in Bihar.

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Arvind Mishra and Jai Nandan Mandal (Mandar Nature Club), IBA team.

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KUSHESHWARSTHAN BIRD SANCTUARY

IBA Site Code : IN-BR-06

State : Bihar

District : Darbhanga

Coordinates : Some important chaurs: Mahrail – 25° 52.296' N, 86° 17.744' E; Nankar (Mahri Dih) – 25° 52.289' N, 86° 17.378' E; Bargaon – 25° 49.074' N, 86° 17.388' E; Larail – 25° 49.547' N, 86° 17.530' E

Ownership : State, Private

Area : c. 2,932 ha

Altitude : 49 msl

Rainfall : Not available

Temperature : Not available

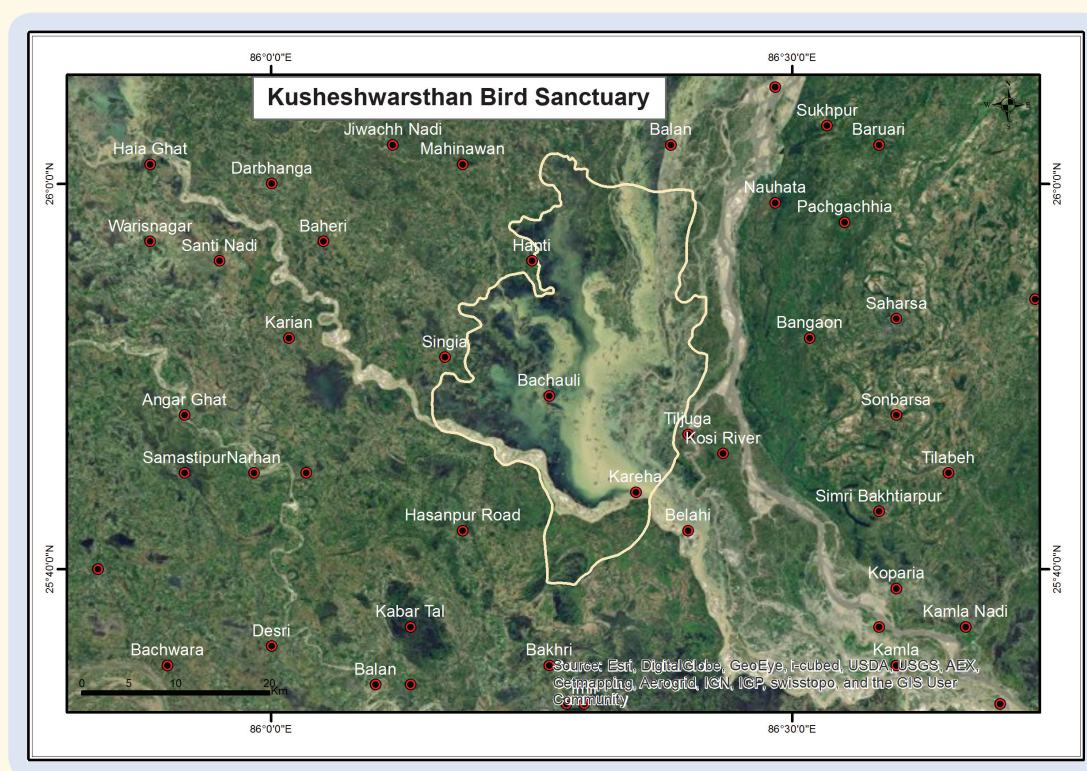
Biogeographic Zone : Gangetic Plains

Habitats : Freshwater Swamps and Lakes

IN-BR-06

IBA CRITERIA : A1 (Threatened species), A4i (1% biogeographic population), A4iii (≥20,000 waterbirds)

PROTECTION STATUS : Bird Sanctuary, notified in 1994,



GENERAL DESCRIPTION

Kusheshwarsthan is the second largest protected area for birds in Bihar, known since pre-Independence for its large and diverse congregations of birds. This bird sanctuary is a group of waterbodies or lakes which remain disconnected from each other during non-flood situations. Travelling from one lake to another means taking a long roundabout route.

This sanctuary is located c. 60 km southeast of Darbhanga in Birail subdivision. The wetlands of this site, locally known as *chaurs*, are spread over the blocks of Biraul, Ghanshyampur, Gaura Bauram, Kiratpur,

Kusheshwarsthan East, and Kusheshwarsthan West. The *chaurs* of the adjoining block Singha in Samastipur district form a contiguous patch. Rain and overflow from the Kosi, Kamala, and Kareh (Baghmati) rivers are the main sources of water for Kusheshwarsthan wetlands.

This sanctuary comprises some large waterbodies like Asama Sakirna, Mahrail, Sugharain, Tilakeshwar, and Mahisath. Medium-sized wetlands include Dinamo, Usri, Kola Usra, Kola-Dhoka, Urthua Golama, and Pachahara (Jha 2005). Other than the abovementioned waterbodies, Larail, Bargaon, and Nankar are also observed to be rich potential sites in Kusheshwarsthan (Jha *et al.* 2011). The low-lying

areas of these blocks are dotted with perennial ponds and lakes. During floods, the water from nearby rivers fills the lake and the level of the lake rises. During the monsoon, more than 10,000 ha become inundated as this lake joins up with Simri Jheel and Kabar Taal (an IBA) (Yahya 1995).

But or over three decades now, Kusheshwarsthan, a low-lying area, has been facing prolonged inundations due to abandoning of the embankment extensions on Kosi, Kamala, and Kareh rivers. This has a devastating effect on the regional economy. People are bound to change their agricultural pattern from wheat and summer paddy due to these inundations.

By and large, the local people, if not hostile, are certainly indifferent to the idea of the bird sanctuary which, they say, is not going to end their miseries. They demand the drainage of excessive water so that their agricultural practices can be restored. High floods sever Kusheshwarsthan's link with the district headquarters and many other places for a couple of months every year during August and September. This dismal situation becomes non-conducive to any development initiative (Arvind Mishra & V.N. Jha, *pers. comm.* 2014).

Large numbers of local people have been dependent on

this wetland for fishing and for some aquatic crops such as Makhana or Foxnut *Euryale ferox*. This site was a hunting ground for birds for royal parties and administrators, but now the lake is occupied by fishermen and agriculturists. Although trapping of birds is prohibited, many local people still depend on it for their survival, catching birds and selling them alive. Kusheshwarsthan was known as the winter capital of migratory birds.

Most of the wetlands and ponds are covered with Water Hyacinth *Eichhornia crassipes*, but the local fishermen and bird trappers bind these weeds together in small pockets to clear the surface area for fishing and bird trapping. A specific fishing technique involves collecting *Eichhornia crassipes* and *Alternanthera* sp. (Sarhanchi) and fixing the nets around it under the water; the construction is known as *jhang*. The fish are driven under the *jhang* by beating metal plates from a boat and approaching the *jhang* gradually. Once in fifteen days, the *jhang* is vacated when the fish are well grown. The technique is used where water depth is at least 1.5 m immediately after the flood is over. The fish species observed at one such *jhang* are *Labeo rohita*, *Wallago attu*, *Channa marulus*, *Channa punctatus*, and many others.



ASAD R. RAHMANI

Kusheshwarsthan Bird Sanctuary is the group of waterbodies which gets connected during the monsoon. The waterbodies attract large number of ducks, waders, storks, egrets and other water loving birds. Asian Openbill *Anastomus oscitans* (above) is commonly seen in the area. It is not hunted by local people as it is considered useful by farmers because it eats Apple Snail *Pila globosa*



ARVIND MISHRA

Although considered Near Threatened by BirdLife International, the Black-headed Ibis *Threskiornis melanocephalus* is still fairly common in India

VULNERABLE

Lesser Adjutant	<i>Leptoptilos javanicus</i>
Greater Spotted Eagle	<i>Clanga clanga</i>

NEAR THREATENED

Oriental Darter	<i>Anhinga melanogaster</i>
Black-headed Ibis	<i>Threskiornis melanocephalus</i>
Eurasian Curlew	<i>Numenius arquata</i>
Ferruginous Duck	<i>Aythya nyroca</i>

The festival known as Shama-Chakewa is a tradition of this Mithilanchal area. This festival is celebrated to welcome the migratory birds during winter, in which girls and women are also involved. For many years, Red Carpet Day was observed at Kusheshwarsthan under the auspices of UNESCO Club of Darbhanga, a local NGO, during winter to welcome the arrival of migratory birds. The famous Shiva temple at Kusheshwarsthan is a highly revered place which is visited by thousands of people regularly.

AVIFAUNA

Kusheshwarsthan used to be one of the most important wetlands of Bihar, but now it is in a sorry state. However, even now, thousands of waterfowl are seen wherever human disturbance is low. According to S.K. Verma of the UNESCO Club of Darbhanga, the birds flock to nearly 200 privately-owned ponds sprawled over 162 ha, and 412

medium-size Government-owned ponds spread over 240 ha in Kusheshwarsthan.

This IBA is being visited by the members of Mandar Nature Club, Bhagalpur, Zoological Survey of India, Patna, and members of IBCN at Darbhanga, at least annually for study and generating awareness.

The site has great potential for bird conservation. Earlier, birds were present in many thousands, even approaching a lakh. Trapping and shooting was rampant. Even now, in many *chours* (waterbodies and marshes), one can observe three to four thousand waterbirds together. Asian Openbill *Anastomus oscitans* are seen in large flocks. Once about 1,500 of them were counted in a single flock. The total population of Asian Openbill in this sanctuary may exceed 1% of the biogeographic population. The most affected is Larail *chaur*, closest to Kusheshwarsthan, where water level has gone down drastically and instead of flocks of birds, only fishing nets are seen covering the whole waterbody. Poaching has been reduced in recent years, though earlier there used to be bird markets. The Lesser Adjutant *Leptoptilos javanicus*, Oriental Darter *Anhinga melanogaster*, and Black-headed Ibis *Threskiornis melanocephalus* have been reported by A. Mishra (*in litt.* 2002).

OTHER KEY FAUNA

Not many studies have been done on other fauna, but the site is known for its variety of edible fishes. Snakes and crustaceans are common and people have reported turtles

and even otters from the area. Golden Jackal *Canis aureus* is commonly sighted.

LAND USE

- Nature conservation and research
- Agriculture
- Aquatic crops
- Fishing

THREATS AND CONSERVATION ISSUES

- Trapping of birds
- Poaching
- Illegal bird trade
- Lack of comprehensive and continued survey
- Agricultural runoff
- Eutrophication
- New embankments in the catchment area
- Railway line across the sanctuary

Thousands of people depend upon these wetlands for cultivation, fishing, and (illegal) bird trapping. The site is hardly receiving any attention and is rarely visited by the staff and officers of the state forest department. Despite a legal ban on trapping and selling wild birds, thousands of waterfowl are illegally sold here and sometimes even taken to neighbouring districts like Saharsa, Muzaffarpur, and Samastipur. Thousands of birds are poisoned by mixing pesticide in fried rice and spreading it in the foraging areas. This slow poison cripples the birds, which are then easily picked up by poachers.

This fragmented bird sanctuary is facing two new emerging threats:

Recently, a 30 km long Kamala Balan Embankment Extension between Jhamta (c. 8 km north of Kusheshwarsthan) and Phuhia (c. 20 km south of Kusheshwarsthan) is being constructed which is likely to adversely affect the inflow of water in the sanctuary. Many new waterlogged areas may be formed near and away from the sanctuary. Siltation in this area due to this new development is likely to create many unseen problems of water management in the *chaurs* of the sanctuary (Arvind Mishra, *pers. comm.* 2014).

The 76 km long new broad gauge railway line across Sakri-Biraul-Kusheshwarsthan-Hasanpur was being constructed through the sanctuary. The land was raised up to both the ends of the sanctuary and a little inside the sanctuary too. Three km of the line was falling within the sanctuary area. The proposal was brought to the meeting of the State Board for Wildlife, Govt. of Bihar, on February 25, 2012 for approval. The scheme was planned in 1996, while the sanctuary was notified in 1994. The proposal was declined at the meeting and the work remains suspended.

Due to a change in the course of Kosi river in the flood of 2008, 50–60% less waterlogged area had been observed in the sanctuary area. The major portion of the waterbodies had gone under cultivation and a bumper crop was obtained. People had cultivated maize and wheat, which was being attacked by crabs cutting the tender shoots of the crop. The farmers spray insecticides (cypermethrin 10%) to kill the crabs. Birds such as Asian Openbill which are numerous in the area and other storks could be used to target these crabs instead of chemical pesticide. The practice of *jhang* is seen to be dying out in this *chaur* due to lack of water.

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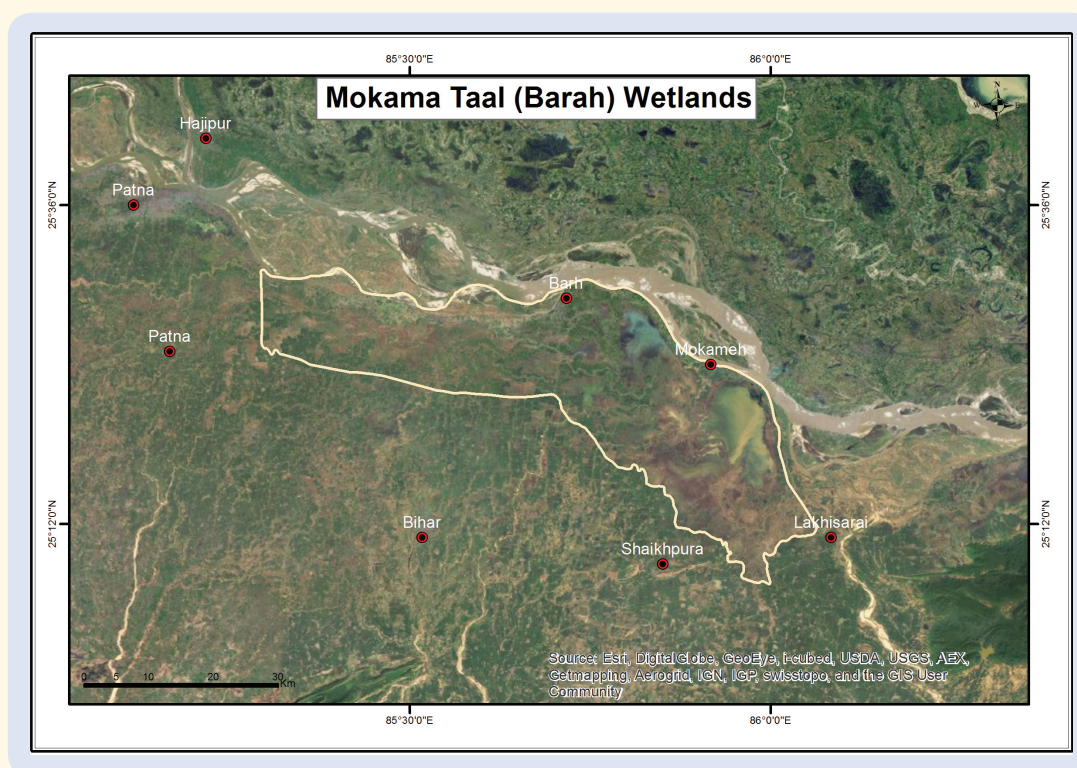
MOKAMA TAAL (BARAH) WETLANDS AND FATUAH TAAL

IN-BR-07

IBA Site Code	: IN-BR-07	Altitude	: 50 m
State	: Bihar	Rainfall	: 1,100 mm
District	: Patna, Saran, Vaishali and Samastipur	Temperature	: 5 °C to 45 °C
Coordinates	: 25° 36' 19" N, 85° 19' 21" E	Biogeographic Zone	: Gangetic Plain
Ownership	: State/ Private	Habitats	: Rivers, Freshwater Swamp, Seasonal Marsh
Area	: 67,500 ha		

IBA CRITERIA : A1 (Threatened species), A4i (1% biogeographic population), A4iii (≥20,000 waterbirds)

PROTECTION STATUS : Not officially protected area.



GENERAL DESCRIPTION

This area includes the foraging ground for the large number of Asian Openbill and other birds that breeds in Danapur Cantonment. Different islands and sandbars near the confluence of Ganga and Gandak rivers provides excellent habitat for diverse bird species like wagtails, larks, pipits, waders and Anatids. In the Fatuah wetlands, waders like Ruff, Wood Sandpiper and many others are always trapped in the nets in thousands and sold in the Patna township and in the market of Patna City. They sell all the waders in the name of *Chaha* (snipes) and all the small birds like larks, pipits, wagtails, bulbul and others in name of *Bagheri*. Chaha and Bagheris are cautiously served in the hotels in this zone. Patna City is one of the biggest market in the country for common and rare varieties of

birds and animals. The Mirshikaris are running this illegal trade in a well organized manner. With the onset of winter, every year, a month long Sonepur Mela (fair) is organized on the bank of river Gandak. Other than the religious and cultural values, this fair is known as the biggest animal trade fair. A separate market to sell the birds is installed in the fair and the nearest police thana is the *Chiriya Bazar Thana*.

Fatuah Tal covers about 67,500 ha shallow waterbodies, parts of river Ganga and Gandak and their confluence. The important landmarks in the area are Digha (7 km NW to Patna) at 25° 39' 02" N, 85° 04' 58" E, and further about 10 km N to Digha at 25° 44' 05" N, 85° 05' 33" E, extending to Sonepur (about 11 km NE to Patna) at 25° 42' 00" N, 85° 11' 58" E, and close to Bakhtiarpur (about 45 km E to Patna)

at 25° 32' 45" N, 85° 33' 58" E, Fatuah at 25° 31' 10" N, 85° 17' 49" E (20 km NE to Patna).

The topography of the area is generally flat land, like most of the Gangetic plains. It is a fairly compact tract of alluvial plain, sloping gently from south to north. Mokama Taal and Fatuah Taal are perennial water systems and exhibit enormous biodiversity.

AVIFAUNA

About 149 species of birds have been estimated to occur in the area. Further surveys will most certainly add to the number of species. The site also holds, on a regular basis, over 20,000 breeding and migratory waterbirds. The Black Ibis *Pseudibis papillosa*, Glossy Ibis *Plegadis falcinellus*, Eurasian Spoonbill *Platalea leucorodia*, Greylag Goose *Anser anser* and Barheaded Goose *A. indicus* are some of the species reported from the area.

Flocks of 200 Eurasian Spoonbill are not uncommon. Similarly, Lesser Whistling Duck *Dendrocygna javanica* is found in thousands, along with a few hundred Large Whistling Duck *D. bicolor* (Mehboob Alam *pers. comm.* 2002). One species of Biome 05: Eurasian High Montane (Alpine and Tibetan), 12 species of Biome 11: Indo-Malayan Tropical Dry Zone and 13 threatened species are found in the area.

Among these 12 threatened species, two are Critically Endangered, three are Vulnerable and rest are Near Threatened. The Critically Endangered vultures are now rarely seen in the area. Similar is the case with Pallas's Fish-eagle.

CRITICALLY ENDANGERED

White-rumped Vulture	<i>Gyps bengalensis</i>
Long-billed Vulture	<i>Gyps indicus</i>

VULNERABLE

Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>
Greater Spotted Eagle	<i>Clanga clanga</i>

NEAR THREATENED

Oriental Darter	<i>Anhinga melanogaster</i>
Ferruginous Duck	<i>Aythya nyroca</i>
Black-headed Ibis	<i>Threskiornis melanoleuca</i>
Painted Stork	<i>Mycteria leucocephala</i>
Eurasian Curlew	<i>Numenius arquata</i>
River Lapwing	<i>Vanellus duvaucelii</i>
River Tern	<i>Sterna aurantia</i>
Alexandrine Parakeet	<i>Psittacula eupatria</i>

OTHER KEY FAUNA

The site is surrounded by agricultural fields and villagers and Blue Bull and Wild Boars are the common nuisance for the farmers. The state department of Environment and Forests has permitted the hunting of Blue Bulls and has advertised that the cost of hunting them with the permission of the nominated local authority and disposing them properly will be born by the government. The other common fauna like Jackals, snakes and common reptiles and large varieties of fishes are found in the area.

LAND USE

- Agriculture
- Fishing

THREATS AND CONSERVATION ISSUES

- Filling in of wetlands
- Construction of thermal power plant
- Pollution from agricultural chemical runoff
- Encroachment and construction of multiplexes on the banks of river specially near Patna area.
- Large scale hunting, poaching and trade of birds.
- National waterways – 1

The wetlands are under considerable threat from the proposed construction of the Barh Super Thermal Power Plant by the National Thermal Power Corporation Ltd (Anon. 2000). The construction of the plant and the subsequent dumping of fly ash generated by it would choke the wetland and destroy its wildlife.

Although trapping and shooting of birds is prohibited by law, these activities go on, albeit on a much smaller scale than before. Poisoning of waterfowl with pesticide using rice as bait is also becoming a common *modus operandi* to catch birds. In the river course near Fatuah, hundreds of Ferruginous Ducks and other anatids are hunted at a time by the method of poisoning them regularly. Now the Cruise are operating in the river Ganga taking foreign visitors for tourism and such reports are evidenced by them also.

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NAGI DAM AND NAKTI DAM BIRD SANCTUARY

IN-BR-08

IBA Site Code : IN-BR-08

State : Bihar

District : Jamui

Coordinates : Nagi (north end) 24° 49.379' N,
86° 24.001' E; Nakti (south end)
24° 51.290' N, 86° 26.711' E

Ownership : State (Irrigation Department)

Area : 1,123 ha

Altitude : 200 msl

Rainfall : >1,800 mm

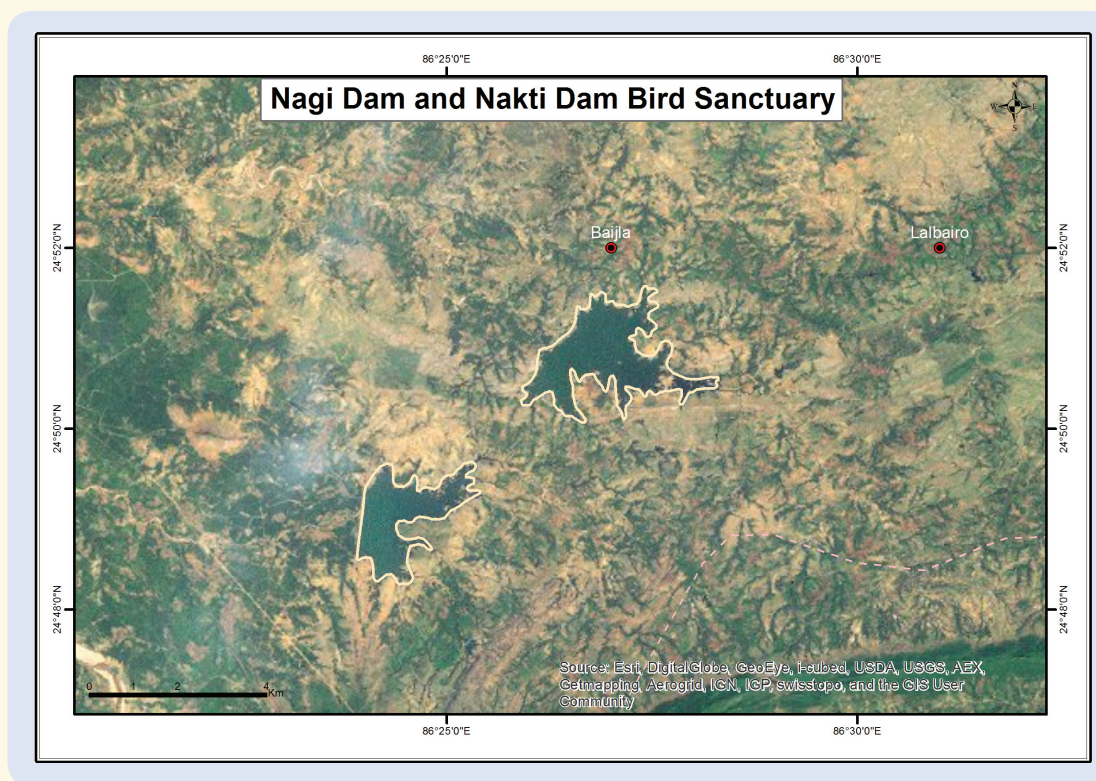
Temperature : 10 °C to 45 °C

Biogeographic Zone : Deccan Peninsula

Habitats : Freshwater Swamp

IBA CRITERIA : A4i (1% of biogeographic population), A4iii (≥20,000 waterbirds)

PROTECTION STATUS : Bird Sanctuaries. Nagi Dam Bird Sanctuary notified in 1984, Nakti Dam Bird Sanctuary in 1987.



GENERAL DESCRIPTION

The Nagi Dam (191 ha) and Nakti Dam (332 ha) are two sanctuaries so close to each other that they can be treated as one bird area. Nagi is c. 7 km from Jhagha in Jamui district, and Nakti is a further c. 4 km from Nagi, occupying similar habitat. Along a newly developed road, Nakti via Dadpur Chowk is about 18 km from Jhagha and Nagi a little less. These notified sanctuaries are surrounded by rocky hillocks formed by the damming of streams. Both these waterbodies are quite deep, with a clear water surface. The dams were built to supply water to local farms. There are cultivable lands adjacent to both the waterbodies. While the source of water for Nagi is rain, Nakti gets water from Nakti river.

AVIFAUNA

About 1,600 Bar-headed Goose *Anser indicus* have been recorded from this site (A. Mishra, *pers. comm.* 2002). According to Wetlands International (2012), 1% threshold of this species is 560; accordingly about 3% of the population is found at this IBA site. In 2013, 3,000 Red-crested Pochard were counted by Arvind Mishra and Anand Kumar (Range Forest Officer). This is 3% threshold of the species. This site could attract more than 20,000 birds, if fishing and other disturbances are curtailed during winter when most of the migrants are found in India.

Beyond the cultivated areas, these waterbodies are surrounded by barren, rocky terrain. Consequently, dryland



Nagi and Nakti dams were created by damming of streams. The dams were built to supply water to local farms. They attract thousand of waterfowls during winter

birds are also seen, such as the Indian Courser *Cursorius coromandelicus*, Indian Sandgrouse *Pterocles exustus*, Yellow-wattled Lapwing *Vanellus malabaricus*, and Indian Robin *Saxicoloides fulicata*.

The site lies in Biome 12, i.e. Indo-Gangetic Plains, but species of Biome 11 (Indo-Malayan Tropical Dry Zone) are also sighted.

OTHER KEY FAUNA

No information

LAND USE

- Fishing
- Agriculture
- Irrigation

THREATS AND CONSERVATION ISSUES

- Agricultural runoff
- Land dispute between Irrigation and Forest Departments
- Fishing (presently banned)

The land on which these waterbodies are located belongs to the Irrigation Department. However, as the sanctuaries have been notified and the wildlife comes under the jurisdiction of the Forest Department, there are many legal contradictions. For instance, the Irrigation Department gives fishing lease to private individuals, which is contested by the Forest Department and NGOs such as the Mandar Nature Club. The State Government is reluctant to transfer the land to the Forest Department as the government fears that once this is done, fishing and exploitation of other resources would be curtailed. A system needs to be developed whereby water and fish resources are exploited by different

ENDANGERED

Black-bellied Tern	<i>Sterna acuticauda</i>
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NEAR THREATENED

Oriental Darter	<i>Anhinga melanogaster</i>
Painted Stork	<i>Mycteria leucocephala</i>
Black-headed Ibis	<i>Threskiornis melanocephalus</i>
Ferruginous Duck	<i>Aythya nyroca</i>
River Tern	<i>Sterna aurantia</i>

BIOME 11: INDO-MALAYAN TROPICAL DRY ZONE

Ashy-crowned Sparrow-lark	<i>Eremopterix grisea</i>
Red-naped Ibis	<i>Pseudibis papillosa</i>
Indian Chat	<i>Cercomela fusca</i>
Indian Courser	<i>Cursorius coromandelicus</i>
Indian Robin	<i>Saxicoloides fulicata</i>
Yellow-wattled Lapwing	<i>Vanellus malabaricus</i>

departments but, at the same time, birds are least disturbed. After many years of advocacy by Mandar Nature Club, fishing was curtailed though not completely banned in winter months, as a result of which there is an increase in the number of birds visiting these wetlands. The survey in 2013 clearly suggests that the number of birds has markedly increased in these bird sanctuaries during the last decade.

As this IBA is in an insurgency belt, there is heavy police presence as a result of which not many poachers dare to hunt here. Even in the smaller wetlands or ponds in the villages of Chakai/ Chandramundi region on the periphery of the sanctuaries, migratory birds were found swimming undisturbed. At Chandramundi village, in a small village pond, 150 Northern Pintail *Anas acuta*, two Bar-headed Goose *Anser indicus*, and six Ruddy Shelduck *Tadorna ferruginea* were observed.

LAND USE

- Conservation
- Irrigation

THREATS AND CONSERVATION ISSUES

- Siltation from the surrounding agricultural fields and pumping of large amount of water by farmers are two major problems that will ultimately reduce these waterbodies.
- The Department of Environment and Forests, Government of Bihar has started preparing the management plan of both these sanctuaries based on the data collected on birds, mammals, flora, and water quality by Mandar Nature Club and Tilka Manjhi Bhagalpur University.
- The land is still owned by the Department of Water Resources and water is being released from the lakes for irrigation. There should be an agreement within the Departments of Forests and of Water Resources to maintain a minimum water level suitable for birds.



ANAND KUMAR

The water use is regulated by sluice gates and supply to farmers through channels.

There is a need of coordination between the irrigation department and forest department to retain sufficient water in the winter season. Excessive fishing should be controlled, particularly during winter when the migratory birds are present

- There is a need to train local birdwatchers who can work as tourist guides for visitors. The beauty and potential of the area should be advertised well, and a system developed to ensure safe accommodation and transportation for visitors. Binoculars and field guide books should be available in the range office at Jhajha.

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VALMIKI TIGER RESERVE

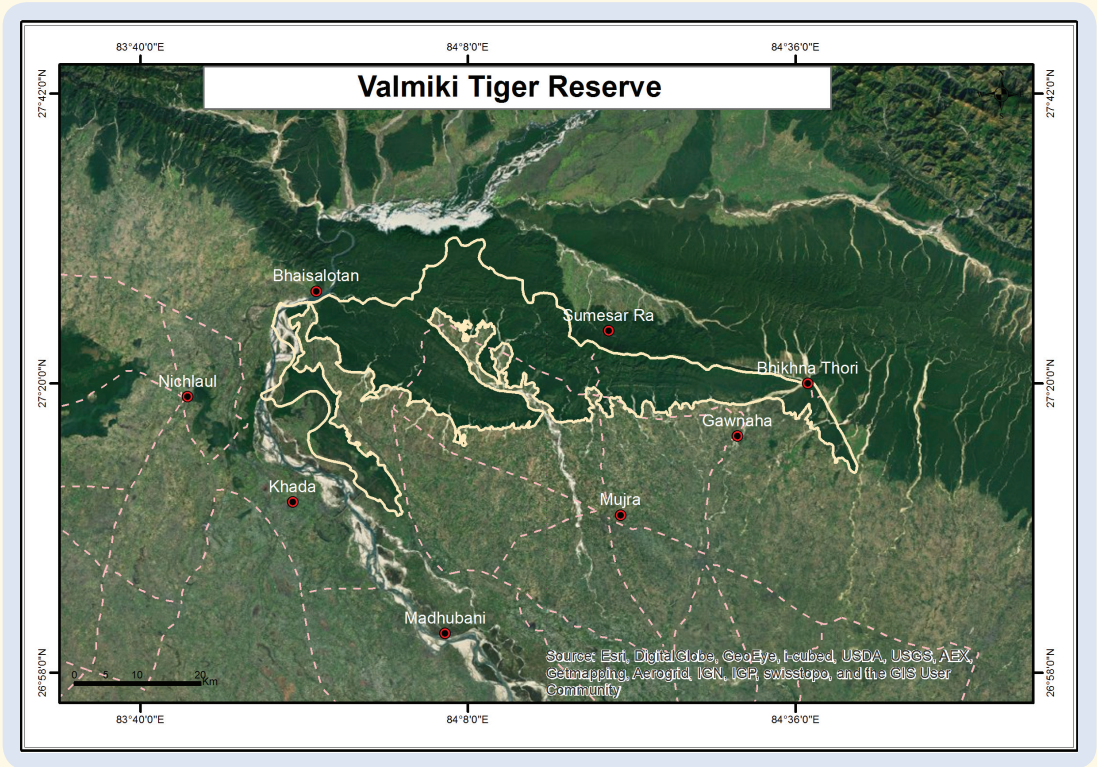
IN-BR-10

IBA Site Code	: IN-BR-10
State	: Bihar
District	: West Champaran
Coordinates	: 27° 18' 30" N, 84° 08' 36" E
Ownership	: State
Area	: Valmiki Tiger Reserve: 899.38 sq. km
Altitude	: 125–880 msl

Rainfall	: Up to 2,000 mm
Temperature	: 8 °C to 36 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Tropical Dry Deciduous, Tropical Moist Deciduous, Tropical Bamboo Brakes, Freshwater Swamp, Alluvial Grasslands, Cane Brakes

IBA CRITERIA : A1 (Threatened species), A3 (Biome 12: Indo-Gangetic Plains)

PROTECTION STATUS : National Park, Wildlife Sanctuary, Tiger Reserve.



GENERAL DESCRIPTION

Valmiki Tiger Reserve (VTR) is located in the northernmost part of West Champaran district of Bihar, in the foothills of the Himalaya. The tiger reserve encompasses Valmiki National Park (335.6 sq. km) and Valmiki Wildlife Sanctuary (545.18 sq. km). The core area of the tiger reserve is 589.79 sq. km, while buffer zone encompasses 309.14 sq. km. River Gandak (also known as Narayani in Nepal) forms the western boundary of the reserve. River Burhi Gandak originates from the tiger reserve by the name of Harha-Masan. The tiger reserve is criss-crossed by several rivers, namely Manor, Bhapsa, Dhunghi, Singha, Dwardah, Pachnad, Pandai, and Dorham. The tiger reserve represents

the last remnants of *terai* forest and grasslands in Bihar, as most of these habitats have been converted into agricultural fields. There are many grasslands in Purnea, Araria, and Kishanganj districts, but they are not well protected. The reserve is surrounded by more than 140 villages which put tremendous pressure on its habitats.

Flora and habitat: According to the classification of Champion & Seth (1968), there are seven forest types: i. Bhabar-Dun Sal Forest, ii. Dry Shivalik iii. Sal Forest, iv. West Gangetic Moist Mixed Deciduous Forest, v. Khair-Sissoo Forest, vi. Cane Brakes, vii. Barringtonia Swamp Forest, and Eastern Wet Alluvial Grassland in Valmiki Tiger Reserve.

The Botanical Survey of India (1998) has identified eight habitat types: i. moist mixed deciduous, ii. open land vegetation, iii. sub-montane, iv. semi-evergreen formation, v. freshwater swamp, vi. riparian fringing, vii. alluvial grasslands and high hill savannahs, and viii. wetland.

Important tree species include Sal *Shorea robusta*, *Mallotus phillipensis*, *Haldina cordifolia*, *Terminalia tomentosa*, *Syzygium cumini*, *Salmalia malabarica*, *Lannea grandis*, several species of *Ficus*, and Khair *Acacia catechuoides*. *Pinus roxburghii* (Chir Pine) is found in Someshwar hills in Raghia and Gobardhana Ranges. *Dalbergia latifolia* categorized as Vulnerable occurs in the reserve, but due to illegal felling, mature trees are getting scarce. Bhattacharya & Sarkar (1998) have reported two species of Cane, *Calamus tenuis* and *C. viminalis*. *Leucas helicterifolia*, *Tetrastigma alciorne*, *Trachyspermum villosum*, and *Uraria pulchra* are endemic to Someshwar hills of Valmiki TR (Bhattacharya & Sarkar 1998). Among the epiphytic orchids, *Vanda tessellata* and *V. teres* are commonly found.

Important grasses in the IBA are *Saccharum spontaneum*, *S. munja*, *S. ravanae*, *Themeda* sp., *Typha* sp., and *Heteropogon contortus*. Sabe grass *Eulaliopsis binata* is found in the bhabar areas and the species is collected by the

locals to make ropes. Bamboo species include *Dendrocalamus hamiltonii*, *D. strictus*, *Bambusa tulda*, *B. balcooa*, and *B. vulgaris* (Bhattacharya & Sarkar 1998). *Mikania micrantha*, an exotic vine, has occupied a significant portion of moist areas in the tiger reserve, and is spreading fast in grasslands and cane brakes. *Chromolaena odorata*, an exotic shrub, is abundant along forest roads and in areas under the influence of anthropogenic disturbances. Dwarf Phoenix *Phoenix humilis* vigorously occupies the open hilly areas under recurrence of forest fire.

AVIFAUNA

The avifauna of this reserve is inadequately studied, but it can be said that where the forest is intact, almost all the *terai* forest species are likely to occur that are found in Dudhwa (Javed & Rahmani 1998) or the adjoining Sohagi Barwa Sanctuary in Uttar Pradesh.

In the recent years, the grasslands have been the focus of protection and management actions. We might even get back the Bengal Florican *Houbaropsis bengalensis* that has become locally extinct in the reserve. Mukherjee (1986) claims to have seen one bird in 1980. To the north of Valmiki Tiger Reserve, in Nepal is located the Royal Chitwan National Park, where this species is still found (BirdLife International 2001). Surveys conducted in 2014 by a BNHS



SAMIR K. SINHA

Valmiki TR is one of the largest protected areas of the Indian Terai harbouring many globally threatened species

team could not locate Bengal Florican, although the grasslands in Madanpur are still in good condition.

The globally Threatened Swamp Francolin *Francolinus gularis* has been reported from the area (Javed & Rahmani 1991). The Vulnerable Sarus Crane *Grus antigone* also occurs in small numbers (Anon. 1993, Sundar *et al.* 2000). The Greater Adjutant *Leptoptilos dubius* has not been seen for many decades, but the Lesser Adjutant *L. javanicus* is still found in streams and ponds. In recent years (2006–2007 onwards), sightings of Critically Endangered *Gyps indicus* and *G. bengalensis* and Near Threatened



SAMIR K. SINHA

The wet grasslands of Valmiki TR particularly Madanpura could be suitable for Critically Endangered Bengal Florican *Houbaropsis bengalensis* although it has not been sighted during the last decade

Gyps himalayensis vultures have improved (Samir Kumar Sinha, *pers. comm.* 2014).

Based on surveys in April-May 2008, January 2010, and January-February 2012, Kelkar *et al.* (2012) have listed 241 species of birds. In the adjacent Royal Chitwan National Park in Nepal, 526 bird species have been recorded (Straede & Treue 2006), so there could be many more species in Valmiki TR as both have very similar habitats.

OTHER KEY FAUNA

Valmiki Tiger Reserve was the 18th tiger reserve to be declared in India, with the sole purpose of arresting the decline of the apex carnivore, Tiger *Panthera tigris*. Besides

Tiger, it has Leopard *P. pardus*, Wild Dog *Cuon alpinus*, Sambar *Cervus unicolor*, Cheetal or Spotted Deer *Axis axis*, Hog Deer *Axis porcinus*, and other associated animals of the Terai. Gaur *Bos gaurus* is found in the forests bordering Chitwan National Park (Sinha 2012).

Wild Buffalo *Bubalus arnee* and Swamp Deer *Rucervus duvaucelii* have become locally extinct. Hispid Hare *Caprolagus hispidus* probably survives in the grassland, but there is no clear-cut evidence in the recent past. The Indian One-horned Rhinoceros *Rhinoceros unicornis* from the adjoining Chitwan National Park also uses the forest of Valmiki Tiger Reserve (Sinha 2011). River Gandak, forming the western boundary of the reserve along Madanpura Range, is a crucial habitat for many threatened aquatic species. Gharial *Gavialis gangeticus* and Gangetic Dolphin *Platanista gangetica* are found in the river. According to the locals, Smooth-coated Otter *Lutragale perspicillata* was commonly seen downstream from Gandak Barrage at Valmikinagar some 15 to 20 years ago, but an authentic report of its presence in recent years is not available.

Among reptiles, the following are reported by ZSI: Yellow-headed Tortoise *Indotestudo elongata*, Three-keeled Land Tortoise *Melanochelys tricarinata*, King Cobra *Ophiophagus hannah*, Burmese Rock Python *Python bivittatus*, Mugger *Crocodylus palustris*, and many others. The famous fish species Golden Mahseer *Tor putitora* is also reported.

CRITICALLY ENDANGERED

White-rumped Vulture	<i>Gyps bengalensis</i>
Indian Vulture	<i>Gyps indicus</i>
Red-headed Vulture	<i>Aegypius calvus</i>

VULNERABLE

Lesser Adjutant	<i>Leptoptilos javanicus</i>
Swamp Francolin	<i>Francolinus gularis</i>
Sarus Crane	<i>Grus antigone</i>

NEAR THREATENED

Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Himalayan Griffon	<i>Gyps himalayensis</i>
River Lapwing	<i>Vanellus duvaucelii</i>
Alexandrine Parakeet	<i>Psittacula eupatria</i>

BIOME 12: INDO-GANGETIC PLAINS

White-tailed Stonechat	<i>Saxicola leucura</i>
Striated Babbler	<i>Turdoides earlei</i>
Rufous-rumped Grass-warbler	<i>Graminicola bengalensis</i>
Black-breasted Weaverbird	<i>Ploceus benghalensis</i>

LAND USE

Agriculture and human habitation is the main land use around Valmiki Tiger Reserve. There are more than 140 villages within 5 km from the boundary of the tiger reserve. An incursion of about 45 sq. km in the Done Valley

area in VTR is occupied by a cluster of 25 revenue villages. Sugarcane and paddy are the main crops in the area.

A barrage was constructed in the late 1960s at Valmikinagar, and three irrigation canals have been channelized from it. These aquatic habitats attract migratory birds in winter.

THREATS AND CONSERVATION ISSUES

- Illegal felling of trees
- Invasion of exotic shrubs and vines
- Livestock grazing
- Forest fires
- Agricultural intensification and expansion
- Construction and impact of dykes
- Firewood collection
- Disease spread from domestic to wild animals
- Abandonment/reduction of land management
- Linear infrastructure like railway line and roads

Till 1980s, the forested areas of Valmiki Tiger Reserve were infested with gangs of dacoits and kidnappers, which adversely affected the conservation action and protection by the Forest Department. However, the situation has improved and these threats have been reduced to nil. But threats from illegal settlements in trans-boundary disputed land at the Indo-Nepal border still exist, affecting the forest and wildlife along the River Gandak. About 81,000 people live in 142 villages on the fringe of the reserve. About 20,000 people in the area depend on forest resources. The buffer area of Valmiki National Park is very prone to fires caused by the locals who graze their cattle, and set fires to encourage growth of grass. Forest fire is a threat to ground-nesting birds. About 60,000 heads of livestock are present in the villages around the reserve, which cause severe damage to the flora.

The grasslands on the fringes are also under biotic pressure due to thatch collection. Many chunks of grasslands have been turned into plantations in the management regime prior to declaration of the tiger reserve in 1994.

Furthermore, the natural flow of two streams was blocked and 1,691 ha forest land was inundated due to the construction of a rail and road bridge. This led to the destruction of 15,000 trees in the buffer zone of the reserve (Jain 2001).

Tourism and recreation: Tourism and recreational activities in the IBA are very limited. In recent years, several initiatives have been taken by the VTR management, which may increase tourist inflow in coming years. In Saraiya Man Lake, tourism is limited to picnics at the year end by locals. However, the lake can be used as a good resource for nature education and ecotourism. The small size of the sanctuary, proximity to district headquarters, and presence of a unique ecosystem of forested wetland (quite uncommon

to the region) improves the possibility of the area being used for nature education.

Research and study: Poor law and order situation in the past seems to be the main reason for the area being poorly researched till early 2000. However, occasional studies were conducted by institutions such as Zoological Survey of India (1998) and Wildlife Institute of India in Valmiki Tiger Reserve. After 2003, Wildlife Trust of India has been conducting thematic studies and implementing conservation actions.

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Samir Kr Sinha

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VIKRAMSHILA GANGETIC DOLPHIN SANCTUARY

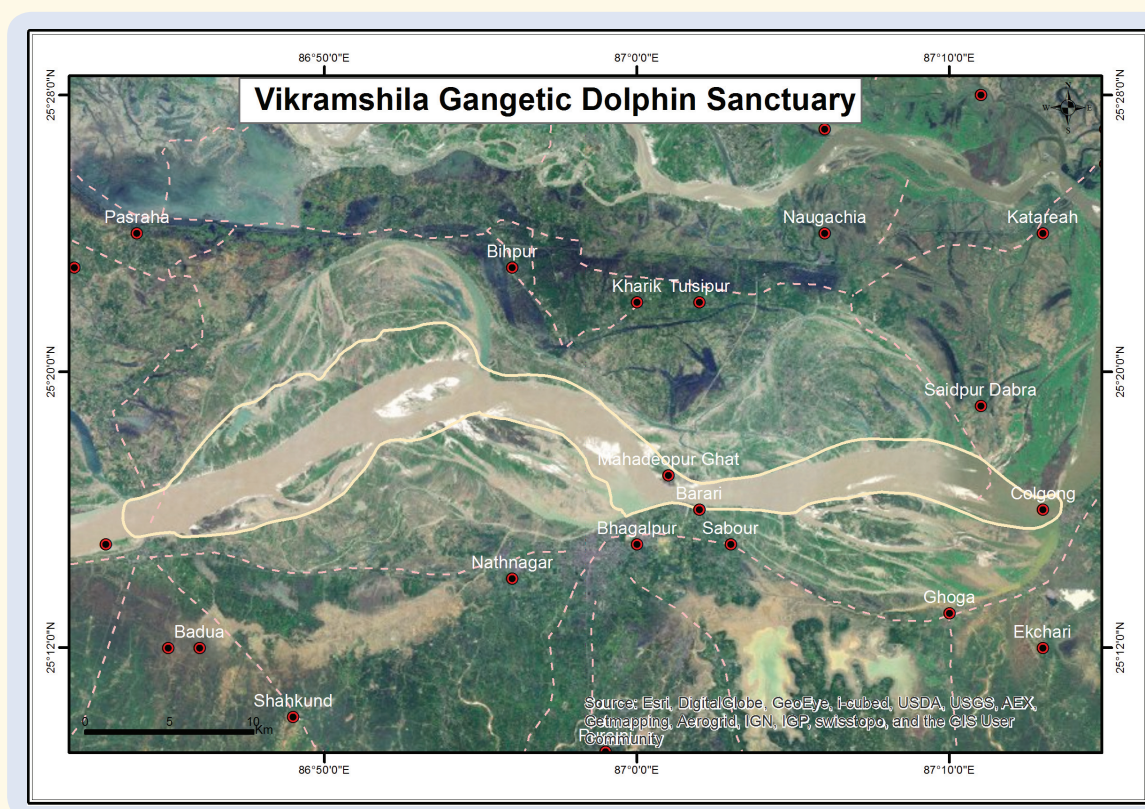
IN-BR-11

IBA Site Code	: IN-BR-11
State	: Bihar
District	: Bhagalpur
Coordinates	: 25° 15' 16" N, 86° 43' 51" E – 25° 15' 55" N, 87° 13' 44" E
Ownership	: State
Altitude	: 36 msl

Area	: c. 150 sq. km. including sandy beds and mudflats on either side of the 60 km stretch of River Ganga
Rainfall	: 1,166 mm
Temperature	: 5 °C to 45 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Riverine Vegetation

IBA CRITERIA : A1 (Threatened species), A4i (1% biogeographic population), A4iii (≥20,000 waterbirds)

PROTECTION STATUS : Wildlife Sanctuary, established in August 1991.



GENERAL DESCRIPTION

A 60 km stretch of the River Ganga extending from Sultanganj eastward to Kahalgaon was notified as the Vikramshila Gangetic Dolphin Sanctuary (Choudhary *et al.* 2006, Sinha 2013). During monsoon, the river inundates a vast floodplain and the river course also changes. There are many small sandbars inhabited by birds, which also serve as their breeding grounds, especially the 36 km section from Sultanganj to Bhagalpur, which seems to be a paradise for birds and other aquatic animals.

AVIFAUNA

This site was selected as an IBA due to the presence

of hundreds of Indian Skimmer *Rynchops albigollis*. Globally Threatened species such as the Greater Adjutant *Leptoptilos dubius* and Lesser Adjutant *L. javanicus* are also present. Other storks present are the Black *Ciconia nigra*, Black-necked *Ephippiorhynchus asiaticus*, Asian Woollynecked *Ciconia episcopus*, Painted *Mycteria leucocephala* and the Asian Openbill *Anastomus oscitans*. The sanctuary is rich in waders. Common Crane *Grus grus*, Eurasian Spoonbill *Platalea leucorodia*, and various ducks are also seen here.

The sanctuary is known to harbour in excess of 1% biogeographic population in India of many species such as Greater Adjutant *Leptoptilos dubius*, Black-necked Stork,

FERNANDO TRUJILLO



In 2012 the Gangetic Dolphin was declared has the Aquatic Animal of India. Besides protecting the dolphin, Vikramshila Gangetic Dolphin Sanctuary also protect the whole riverine ecosystem

Greylag Goose *Anser anser*, Small Pratincole *Glareola lactea*, Little Tern *Sternula albifrons*, and Indian Skimmer. Little Tern and Small Pratincole have been observed breeding in many hundreds if not in thousands on the sandbars and widespread sandy beds along the river, along with Black-

bellied Tern *Sterna acuticauda* (Choudhary and Mishra 2006, Choudhary *et al.* 2007).

Many biome-restricted species are seen in the area adjacent to the river. Little Ringed Plover *Charadrius dubius* has been found breeding on the island, together with Lesser Sand Plover *Charadrius mongolus* during end May 2014. About 10,000 Barn Swallow *Hirundo rustica* were observed on a single island near Sultanganj on October 27, 2012, and two Great White Pelican *Pelecanus onocrotalus* with 150 Painted Stork on October 30, 2012 flocked on a single small sandbar in the sanctuary area. On May 31, 2006, 42 Greater Adjutant and about 1,000 Greylag Goose on January 25, 2009 were also counted. The Black-necked Stork *Ephippiorhynchus asiaticus*, Asian Woollyneck *Ciconia episcopus*, Lesser Adjutant *Leptoptilos javanicus*, and Greater Adjutant are breeding in the floodplain very close to this IBA site (Arvind Mishra, *pers. comm.* 2014).

CRITICALLY ENDANGERED

White-rumped Vulture *Gyps bengalensis*

ENDANGERED

Greater Adjutant *Leptoptilos dubius*

Black-bellied Tern *Sterna acuticauda*

VULNERABLE

Pallas's Fish-eagle *Haliaeetus leucoryphus*

Greater Spotted Eagle *Clanga clanga*

Eastern Imperial Eagle *Aquila heliaca*

Lesser Adjutant *Leptoptilos javanicus*

Asian Woollyneck *Ciconia episcopus*

Indian Skimmer *Rynchops albicollis*

NEAR THREATENED

Oriental Darter *Anhinga melanogaster*

Himalayan Vulture *Gyps himalayensis*

Grey-headed Fish-eagle *Ichthyophaga ichthyaeus*

Ferruginous Duck *Aythya nyroca*

Falcated Duck *Anas falcata*

Black-headed Ibis *Threskiornis melanocephalus*

Painted Stork *Mycteria leucocephala*

Black-necked Stork *Ephippiorhynchus asiaticus*

Black-tailed Godwit *Limosa limosa*

Eurasian Curlew *Numenius arquata*

River Lapwing *Vanellus duvaucelii*

River Tern *Sterna aurantia*

Great Thick-knee *Esacus recurvirostris*

OTHER KEY FAUNA

River Ganga is the lifeline of north India and the Gangetic Dolphin *Platanista gangetica* epitomizes the wealth of biodiversity in India. This is the only Dolphin Sanctuary to be declared in India. Listed by IUCN as Endangered, included in Appendix-II of CITES, and placed in Schedule I of the Indian Wildlife (Protection) Act, 1972, this dolphin enjoys a high level of protection, nationally and internationally. Its decline in numbers seems to be arrested if not increasing a little during the last decade due to public awareness, research, and educational activities. About 150 Gangetic

River Dolphin currently inhabit the sanctuary area. It was declared the National Aquatic Animal on October 5, 2009.

There are more than 75 species of fishes, Indian Smooth Coated Otter *Lutrogale perspicillata*, Ghariyal *Gavialis gangeticus*, Indian Monitor Lizard *Varanus bengalensis*, and various species of turtles and snakes. A large Crocodile, which had probably migrated from River Gandak during floods some years earlier, was caught near Kahalgaon in January 2011. A young crocodile was also found in the mudflat of the river at Bhagalpur.



ARVIND MISHRA

Vikramshila Gangetic Dolphin Sanctuary has become an important foraging and nesting area for large number of migratory and resident birds such as Painted Stork (above), Black-bellied Tern, River Tern, River Lapwing and others

LAND USE

- Irrigation
- Fishing
- Water Transportation
- Rituals and festivals
- Domestic use and cattle washing
- Collection of crustaceans and other animals for food
- Recreation

The Department of Environment and Forests has started some campaigns and the task of preparing the management plan of the sanctuary has been assigned to Zoological Survey of India, Bihar.

THREATS AND CONSERVATION ISSUES

- Pollution from agrochemicals, dyes, sewage, garbage, plastics, and idol immersion
- Extensive regular fishing and fishing by gill nets; fish mafia depriving small fishermen
- Proposed water transportation project
- Illegal capture and trade of turtles
- Intensive activities on sandbars for fishing, agriculture, and others
- Grazing on the islands which are breeding grounds of birds and turtles
- Massive hunting and killing of birds by large nets and poisoning
- Criminal and other antisocial activities
- Opposition to the sanctuary by local vested interests
- Cremation on the banks
- Encroachment on the southern margins for construction of houses

Little needs to be said regarding the importance of the Ganga for the millions of people who depend upon it for drinking water, irrigation, fishing, transportation, and many other activities. These human activities, especially fishing and transportation, are a severe threat to avian and other biodiversity in and around the river. Cruises across this IBA taking foreign tourists from Howrah to Varanasi were started in 2009. The Government is planning a water transportation project that would disturb the whole sanctuary. Use of gill nets has severely affected the fish and other aquatic species, reducing their population drastically. Sewage and effluents are another major threat that pollute the river. Intensive human activities such as fishing, agriculture, cattle grazing, and the presence of stray dogs on the islands and sandy beds on the margin of the river are a great threat to turtles and to numerous species of birds breeding in thousands.

KEY CONTRIBUTOR

Arvind Mishra

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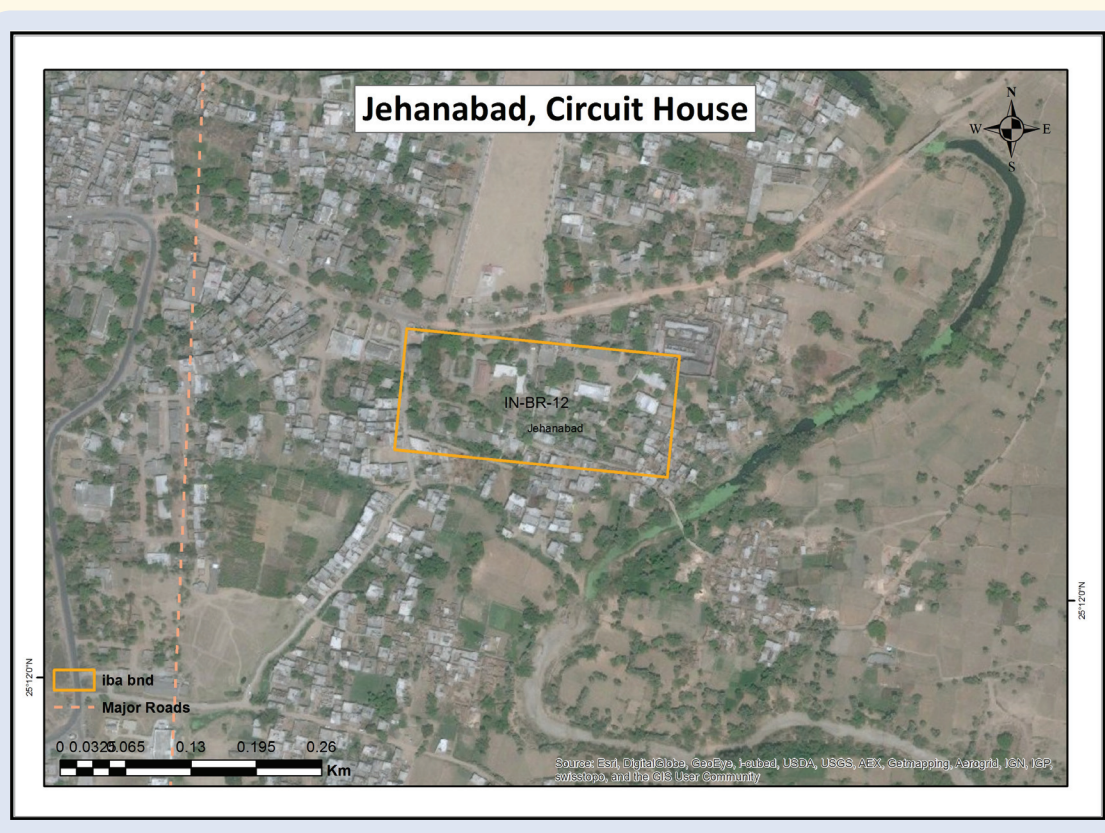
JEHANABAD ADMINISTRATIVE AREA/TOWNSHIP

IBA Site Code	: IN-BR 12	Altitude	: 73 m.
State	: Bihar	Rainfall	: 1074 mm.
District	: Jehanabad	Temperature	: 4 °C to 47 °C
Coordinates	: 25° 12' 09.61" N, 84° 59' 22.93" E	Biogeographic Zone	: Gangetic Plains
Ownership	: State, Private	Habitats	: Terrestrial Plantations/Trees, Freshwater Swamp, Seasonal Marsh
Area	: 3,000 ha		

IN-BR-12

IBA CRITERIA : A1 (Threatened species), A4i (1% biogeographic population), A4iii ($\geq 10,000$ waterbirds)

PROTECTION STATUS : Non-protected area.



GENERAL DESCRIPTION

Jehanabad is a small town 55 km south of Patna and 50 km north of Gaya on National Highway 83. It is situated at the confluence of two small seasonal rivers, Dardha and Yamuniya. Within a kilometre along the city road and river zone is present a large breeding colony of Asian Openbill *Anastomus oscitans*. Barabar Caves are also located in Jehanabad district. They are the oldest surviving rock-cut caves in India, dating from the Mauryan period (322–185 bce), some with Ashokan inscriptions. During June to November, Jehanabad area is covered by paddy crops, and some small natural wetlands full of molluscs and small fishes (*Puntius* spp.). There are

some ponds in and around Jehanabad township for bathing and use of local people throughout the year.

The Asian Openbill breeds on a large number of trees such as Neem *Azadirachta indica*, Peepal *Ficus religiosa*, Gulmohar *Delonix regia*, Tamarind *Tamarindus indica*, Mango *Mangifera indica*, False Ashoka or Mast tree *Polyalthia longifolia* var. *pendula*, Banyan *Ficus benghalensis*, Stone Apple *Aegle marmelos*, Eucalyptus *Eucalyptus obliqua*, Gular *Ficus racemosa*, Jamun *Syzygium cumini*, Jackfruit *Artocarpus heterophyllus*, Pakad *Ficus virens*, Teak *Tectona grandis*, Semal *Bombax ceiba*, and Siris *Albizia lebbek*.



In Jehanabad, thousands of Asian Openbill *Anastomus oscitans* nest, sometimes within the compound of government offices

offensive smell, many local people try to stop them breeding in their campus or chop the branches of the trees. The site holds much in excess of 1% of the South Asian breeding population of Asian Openbill i.e. 3,000 (Wetland International 2012).

OTHER KEY FAUNA

Rhesus Macaque *Macaca mulatta*, Nilgai *Boselaphus tragocamelus*, Wild Boar *Sus scrofa*, Golden Jackal *Canis aureus*, Indian Rock Python *Python molurus*, Indian Cobra *Naja naja*, Rat Snake *Ptyas mucosa*, Monitor Lizard *Varanus bengalensis*, and Indian Grey Mongoose *Herpestes edwardsii* are the key fauna of the locality.

AVIFAUNA

Asian Openbill breeds in very large numbers on huge trees in the government-owned administrative offices, court, and jail, and many privately owned campuses like LIC and Sahajanand Saraswati Library. A systematic survey conducted on October 19, 2014 revealed that other than some common species, the site holds, on a regular basis, over 10,000 breeding waterbirds. They were found breeding on 17 different plant species (Sharma & Kumar 2015, *in press*). In another survey conducted on November 2, 2014 under the guidance of Lalit Kumar Singh, Senior Deputy Collector of Jehanabad, 10,000–15,000 Asian Openbill were estimated to be inhabiting the district headquarters of Jehanabad. These appear to be over-estimates as Arvind Mishra (*pers. comm.* 2014) counted 5,210 birds and about 1,000 nests during the last breeding season (2013) on 17 different trees in Jehanabad.

The local people say that these birds have been observed breeding here since 1989 and their population is increasing. The site seems to be emerging as the largest breeding zone of Asian Openbill in Bihar, along with Danapur Cantonment (an IBA).

Rhesus Macaque *Macaca mulatta* have been observed as a threat for the breeding Asian Openbill, as they destroy nests, eggs, and chicks. In the administrative campus, the official staff uses Northern Plains Langur *Semnopithecus entellus* to chase away Rhesus Macaque to protect the birds. Probably due to ectoparasites, many birds have been observed with wounds on their body. Due to littering of the ground and the

LAND USE

- Agriculture
- Fishing

THREATS AND CONSERVATION ISSUES

- Filling up of local wetlands
- Construction of new buildings in and around the bird habitat
- Vehicular pollution
- Pollution from agricultural chemical runoff

The area is under considerable threat from the construction of new buildings in and around the habitat. Vehicular pollution is a big threat to the Asian Openbill colony. Poaching is also a serious concern for the conservation of the species. All these anthropogenic activities will ultimately destroy the habitat of the Asian Openbill.

KEY CONTRIBUTORS

Gopal Sharma, Navin Kumar, Lalit Kumar Singh, Arvind Mishra.

KEY REFERENCE

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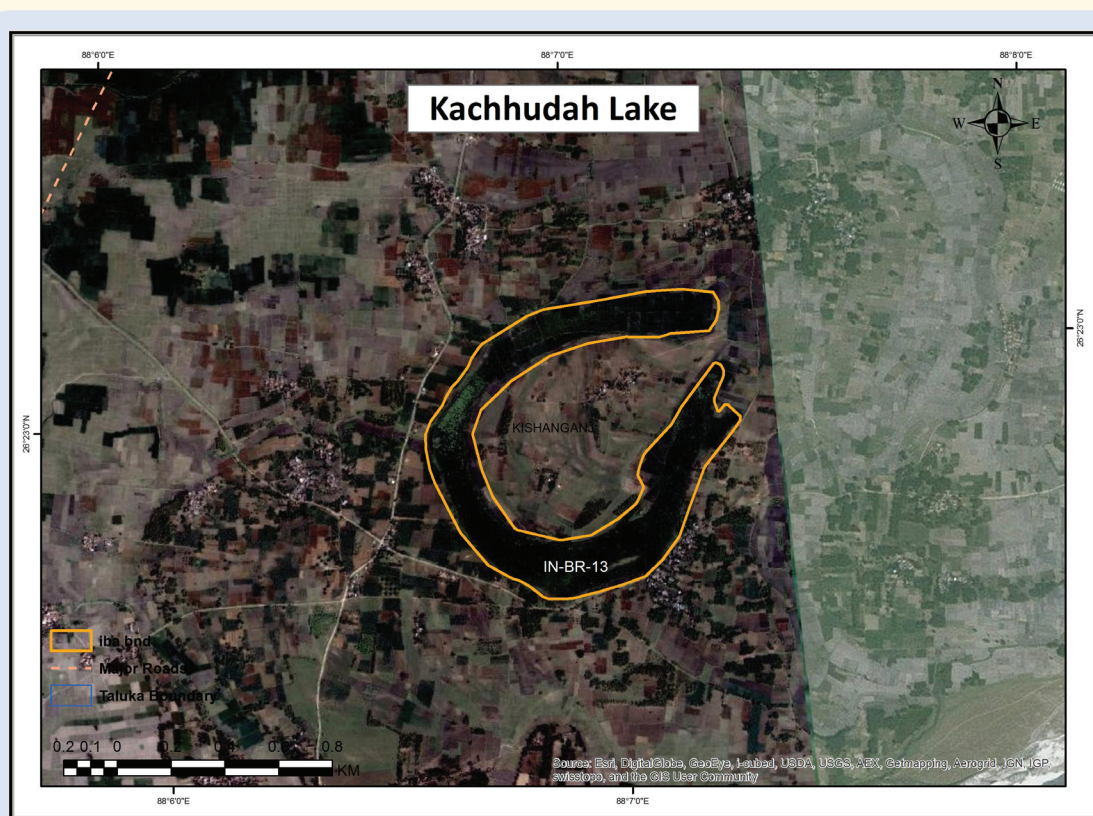
KACHHUDAH LAKE AND MAHANANDA RIVER COURSE

IN-BR-13

IBA Site Code	: IN-BR-13	Area	: Kachhudah Lake c. 150 ha; Mahananda River Course c. 15 sq. km
State	: Bihar	Altitude	: Kachhudah Lake 67 msl; Mahananda River Course 48 msl
District	: Kishanganj	Temperature	: 5 °C to 41 °C
Coordinates	: Kachhudah Lake 26° 22.624' N, 88° 06.768' E; Mahananda River Course 26° 09.655' N, 87° 56.382' E	Biogeographic Zone	: Gangetic Plain
Ownership	: State/Private	Habitats	: Freshwater Swamp, River, Grassland
Rainfall	: 2,250 mm		

IBA CRITERIA : A1 (Threatened species), A3 (Biome 11: Indo-Malayan Tropical Dry Zone)

PROTECTION STATUS : Not officially protected.



GENERAL DESCRIPTION

Kachhudah Lake in Thakurganj Block in Kishanganj district of Bihar is mainly a rainfed marshy wetland which also receives water from Mahananda river during floods. The horseshoe-shaped 300 acre (c. 12 ha) area of this lake mainly belongs to the state government. The lake is heavily infested with *Eichhornia*, which is locally known as *Jal Kachho* or *Dal Kachoo* and thus the lake and the village around it got the name Kachhudah. The area is surrounded by villages and cultivation including bamboo on private land. The lake is said to have existed since the period of the Mahabharata,

when it was known as Dev Jheel (lake of the God). According to legend, the Pandava Bhima used to cook rice here, and take rest on a pillow, and thus there is a place called Bhim Balish near Thakurganj, c. 6 km from Kachhudah.

Some 20 to 25 years ago, the lake was c. 2.4 m deep, which is now just 1.5 m deep. The mixed population of villagers, including some tribals grow Banana, Bamboo, Makhana, Tea, and Paddy. Fishing is also an important source of livelihood in the area. The lake used to be leased for fishing until three to four years ago. Among the fishes; Rohu *Labeo rohita*, Bori *Wallago attu*, Saur *Channa striata*,

Mangur *Clarias batrachus*, Kawai *Anabas testudineus*, and Chapra *Gadusia chapra* are mainly found. Due to heavy infestation of *Eichhornia*, the lease of fishing rights and Makhana cultivation has been stopped, as production has deteriorated. The area was never visited by birdwatchers, but the maiden visit by Arvind Mishra, IBCN State Coordinator of Bihar, records Long-tailed Shrike *Lanius schach*, Brown Shrike *Lanius cristatus*, Tricoloured Munia *Lonchura malacca*, Common Stonechat *Saxicola torquatus*, Grey-headed Lapwing *Vanellus cinereus* in hundreds, Lesser Whistling Duck *Dendrocygna javanica*, and Lesser Adjutant *Leptoptilos javanicus*, and some other common bird species.

Mahananda river confluences with Donk river at 26° 21.935'N, 88° 09.170' E. The two rivers form several islands and sandbars extending north-east and south-west in a stretch c. 7 km long and 2 km wide. The course of these two rivers, along with the sandbars and virgin grasslands on the islands, provides home for many resident and migratory species of birds. These riverine grasslands which were explored by the members of RSPB and Mandar Nature Club in 2013–2014, are possible sites for Bengal Florican *Houbaropsis bengalensis* and varieties of larks, pipits, waders, and many more.

Numerous species of fishes are found in the Mahananda and Donk, and the local community depends on them for their livelihood

AVIFAUNA

The site has come to the attention of birdwatchers only recently, especially the Mahananda river course which was explored for Bengal Florican *Houbaropsis bengalensis* by Ian Barber and Paul Donald of RSPB, with the IBCN state coordinator Arvind Mishra, in 2013 and 2014. A couple of earlier visits were made by the members of Mandar Nature Club, Bhagalpur.

Birds observed in these areas were Ashy Woodswallow *Artamus fuscus*, Ashy-crowned Sparrow-lark *Eremopterix griseus*, Black-bellied Tern *Sterna acuticauda*, Common Stonechat *Saxicola torquatus*, Indian Bushlark *Mirafra erythroptera*, Lesser Sand Plover *Charadrius mongolus* (sometimes seen in breeding plumage), Oriental Skylark *Alauda gulgula*, River Lapwing *Vanellus duvaucelii*, Rufous-winged Bushlark (Rufous-winged Lark or Bengal Bushlark) *Mirafra assamica*, Sand Lark or Indian Short-toed Lark *Calandrella raytal*, Short-eared Owl *Asio flammeus*, Small or Little Pratincole *Glareola lactea*, and Zitting Cisticola *Cisticola juncidis*.

This is a regular feeding ground for Lesser Adjutant *Leptoptilos javanicus*, which breeds in colonies around this

ENDANGERED

Black-bellied Tern	<i>Sterna acuticauda</i>
Egyptian Vulture	<i>Neophron percnopterus</i>

VULNERABLE

Lesser Adjutant	<i>Leptoptilos javanicus</i>
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NEAR THREATENED

River Lapwing	<i>Vanellus duvaucelii</i>
River Tern	<i>Sterna aurantia</i>

wetland. Twelve nests of Lesser Adjutant were observed on four different trees at Saintha Bari (26° 21.935' N, 88° 09.170' E) in 2014.

OTHER KEY FAUNA

No major fauna of conservation concern is found here, but the Golden Jackal *Canis aureus*, Jungle Cat *Felis chaus*, and sometimes Indian Monitor Lizard *Varanus bengalensis* are seen. The Indian Flying Fox *Pteropus giganteus* were also found on the same trees. Indian Cobra *Naja naja* and Rat Snake *Ptyas mucosa* are the snakes reported from the area.

LAND USE

- Agriculture
- Fishing
- Fodder
- Grazing
- Housing material

THREATS AND CONSERVATION ISSUES

- Pumping out water for irrigation
- Grazing
- Lack of grassland management
- Agricultural run off
- Siltation
- Aquatic weeds
- Data deficiency
- Proposed scheme for beautification of lake

Hunting does not seem to be a major issue in the area. The local people demand that this site should be developed as a tourist spot, but plantation and boating in the small Kachhudah Lake may be detrimental to the ecological values of the lake. Human activities and livestock grazing may affect the habitats of many grassland birds and destroy their eggs.

KEY CONTRIBUTOR

Arvind Mishra

KEY REFERENCE

Mishra, A. (2014) Survey of the Potential IBAs in Bihar. Report submitted to Indian Bird Conservation Network (IBCN), Bombay Natural History Society (BNHS).

KAJRA DHAR AND RANIGANJ PROTECTED FOREST

IN-BR-14

IBA Site Code : IN-BR-14

State : Bihar

District : Araria

Coordinates : Kajra Dhar 26° 06.137' N, 87° 16.288' E
(South East corner); Raniganj PF 26°
06.588' N, 87° 14.051' E

Ownership : Private/State

Area : Kajra Dhar 150 ha; Raniganj Vatika 120 ha

Altitude : Kajra Dhar 54 msl;

Raniganj Vatika 58 msl

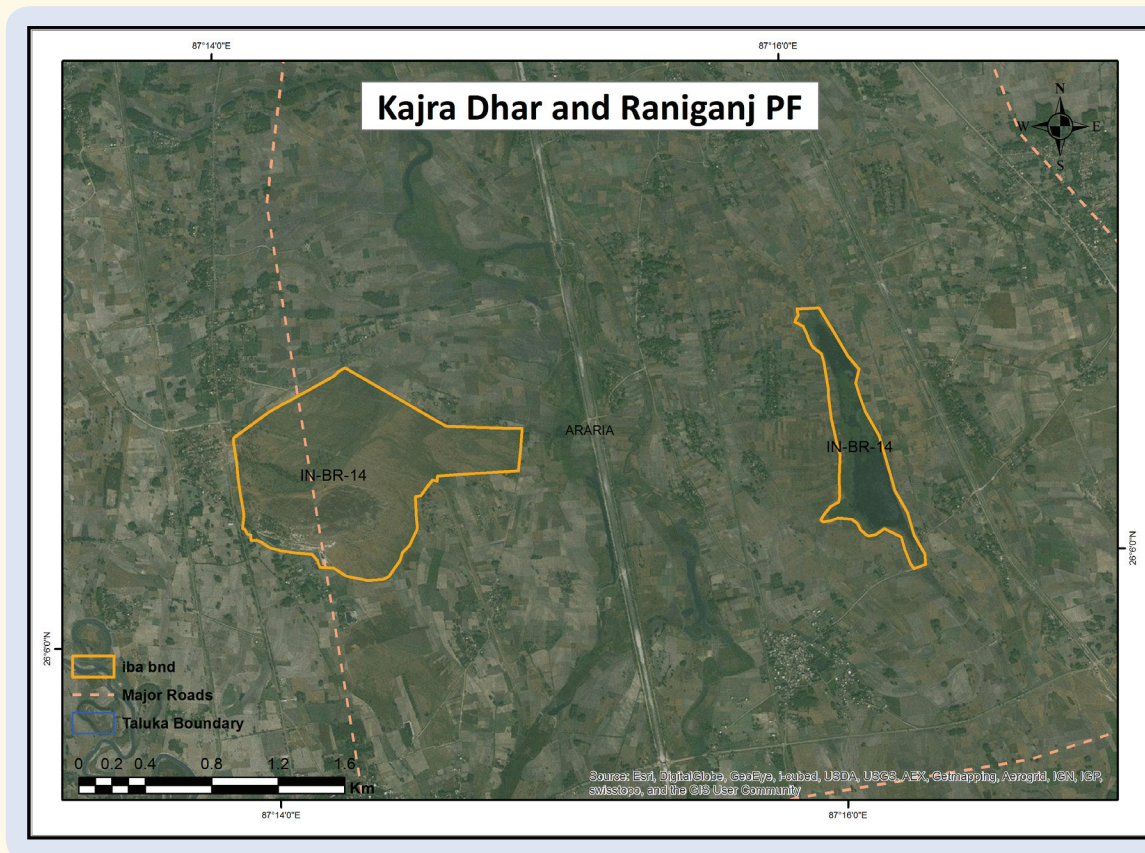
Rainfall : >1,166 mm

Temperature : 5 °C to 45 °C

Biogeographic Zone : Gangetic Plain

Habitats : Freshwater Swamp,
Seasonal Marsh
and Grassland

IBA CRITERIA : A1 (Threatened species)

PROTECTION STATUS : Not officially protected.


GENERAL DESCRIPTION

Kajra Dhar is mainly a rainfed wetland that extends 1.75 km from north to south, with an average width of about 300 m. During monsoon, this wetland may extend to c. 3 km length and 500 m width. It is c. 6 km from Raniganj in Araria district. This wetland has an average depth of c. 1.5 m which is variable with the seasonal rainfall. The Dhar water channel remains almost choked with *Eichhornia*, but even then it is known for its varieties of fish such as Rohu *Labeo rohita*, Katla *Catla catla*, Bori *Wallago attu*, Bhora

Channa marulius, Saur *Channa striata*, Garai *Channa punctatus*, Singhi *Heteropneustes fossilis*, Mangur *Clarias batrachus*, Pothia *Puntius* sp., Kawai *Anabas testudineus*, Bami *Mastacembelus armatus*, and Chapra *Gadusia chapra*, as well as turtles and crustaceans. The Kajra Dhar wetland has clay soil and sand all around. Makhana (Lotus seed) *Euryale ferox* is grown inside the waterbody and jute *Corchorus* sp. on the marginal land. The site is surrounded by agricultural land and groundnut is cultivated in the area. The tribals settled in a village beside the lake are migrants

from Banka district in Bihar and Dumka in Jharkhand. Bangladeshi refugees have also taken shelter in the Refugee Colony near the lake. These tribals constantly hunt the lake for fishes, molluscs, and crustaceans. They beat the floating *Eichhornia* vegetation with sticks to catch fish. Forty-three acres of land in Kajra Dhar belongs to the state government and is often leased for fishing.

Raniganj Protected Forest (PF) at Hasanpur, Raniganj is spread over an area c. 300 acre (120 ha). It is only c. 3.5 km northwest as the crow flies from the western end of Kajra Dhar and 3 km north of Raniganj on the road to Forbesganj. This PF is sandy, with grassland and some plantations introduced in between. A big pond has also been developed within the PF and medicinal plants are being cultivated, along with some exotic fruit species. The area is a deep sandy bed that is several metres in depth, which makes it difficult for crops and other trees to survive, except in the grassland. However, Raniganj PF can be developed as an excellent ecotourism site along with the nearby Kajra Dhar.

Some other grasslands around Raniganj PF are Singhia PF (25° 58.435' N, 87° 18.753' E) in Purnea district (16 km), Haria Bara PF (25° 08.449' N, 87° 26.344' E) in Araria (21 km); and Simraha PF (26° 12.051' N, 87° 19.238' E) in Araria (13 km). These are also rich in grassland birds and are possible sites for Bengal Florican *Houbaropsis bengalensis* which were explored by the members of RSPB and Mandar Nature Club in 2013–2014. These sites were not explored earlier for birds in general, but the sightings in a single visit are really encouraging.

AVIFAUNA

The site was visited by the members of Mandar Nature Club, Bhagalpur. Kajra Dhar is not very rich in avifauna, but it is a regular feeding ground for birds like Lesser Adjutant *Leptoptilos javanicus* (Mishra 2104, Anon. 2014). The colonies of breeding Lesser Adjutant nearby mainly depend on this wetland for food. Fifteen nests of Lesser Adjutant were observed on three trees in the campus of Raniganj Police Station in January 2014.

Greater Adjutant *Leptoptilos dubius* is also reported from nearby, which is yet to be authenticated, but the possibility cannot be denied. The Near Threatened species, River Tern *Sterna aurantia* is also reported. This wetland is seen as a potential site for waders like Wood Sandpiper *Tringa glareola*, Little Ringed Plover *Charadrius dubius*, stints, snipes, and Grey-headed Lapwing *Vanellus cinereus*. Pied Harrier *Circus melanoleucos* has been observed here, along with Lesser Whistlingduck *Dendrocygna javanica*, Eurasian Coot *Fulica atra*, Red-naped Ibis *Pseudibis papillosa*, Purple Heron *Ardea purpurea*, Golden Oriole *Oriolus oriolus*, and Plum-headed Parakeet *Psittacula cyanocephala*. The grassland area of Raniganj PF is inhabited by birds like Indian Cuckoo *Cuculus micropterus*, Bengal Bush-lark *Mirafra assamica*, and Black Francolin *Francolinus*

VULNERABLE	
Lesser Adjutant	<i>Leptoptilos javanicus</i>
NEAR THREATENED	
River Tern	<i>Sterna aurantia</i>



PRADIP KUMAR SINGH

Kajra Dhar is at present under tremendous human pressure of over fishing. This large wetland if properly protected can become good habitat for waterbirds



ASAD R. RAHMANI

Fifteen nests of Lesser Adjutant *Leptoptilos javanicus* were observed on three trees in the campus of Raniganj Police Station in January 2014

francolinus, and has twice been explored for Bengal Florican *Houbaropsis bengalensis* by RSPB members Ian Barber and Paul Donald, with the IBCN state coordinator Arvind Mishra in 2013 and 2014, but the florican was not found.

OTHER KEY FAUNA

No major fauna of conservation value is found here, but the Golden Jackal *Canis aureus*, Jungle Cat *Felis chaus*, and sometimes Indian Monitor Lizard *Varanus bengalensis*, Nilgai *Boselaphus tragocamelus*, and Wild Boar *Sus scrofa* are seen. Rat Snake *Ptyas mucosa* and water snakes are also observed in the area. Rats, python, and insects like beetles and grasshoppers are also found in plenty.

LAND USE

- Agriculture
- Fishing
- Recreation
- Nursery
- Research and study

THREATS AND CONSERVATION ISSUES

- Pumping out water for irrigation
- Plantation in the grassland
- Lack of grassland management
- Agrochemical run-off
- Siltation and Aquatic weeds
- Scheme to develop Amusement Park in the grassland

This site is partially protected by the Department of Environment and Forests, and poaching, poisoning, or hunting seem not much in practice.

KEY CONTRIBUTOR

Arvind Mishra

KEY REFERENCES

- Mishra, A. (2014) Survey of the Potential IBAs in Bihar. Report submitted to Indian Bird Conservation Network (IBCN), Bombay Natural History Society (BNHS).
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